

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 20-F

- REGISTRATION STATEMENT PURSUANT TO SECTION 12(b) OR (g) OF THE SECURITIES EXCHANGE ACT OF 1934
- OR
- ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 For the fiscal year ended December 31, 2019
- OR
- TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
- OR
- SHELL COMPANY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
- Date of event requiring this shell company report _____
For the transition period from _____ to _____

Commission file number 001-15264

中国铝业股份有限公司

(Exact name of Registrant as specified in its charter)

ALUMINUM CORPORATION OF CHINA LIMITED

(Translation of Registrant's name into English)

People's Republic of China
(Jurisdiction of incorporation or organization)

No. 62 North Xizhimen Street, Haidian District, Beijing
People's Republic of China (100082)
(Address of principal executive offices)

Lu Dongliang
No. 62 North Xizhimen Street, Haidian District, Beijing
People's Republic of China (100082)
(86) 10 8229 8322
ir@chalco.com.cn

(Name, Telephone, Email and/or Facsimile number and Address of Company Contact Person)

Securities registered or to be registered pursuant to Section 12(b) of the Act.

Title of each class	Trading Symbol	Name of each exchange on which registered
American Depositary Shares* Class H Ordinary Shares**	ACH	New York Stock Exchange, Inc.

* Evidenced by American Depositary Receipts. Each American Depositary Share represents 25 H Shares.

** Not for trading, but only in connection with the listing of American Depositary Shares, pursuant to the requirements of the Securities and Exchange Commission.

Securities registered or to be registered pursuant to Section 12(g) of the Act.
None
(Title of Class)
Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act.
None
(Title of Class)

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report.

As of December 31, 2019:

Domestic shares, par value RMB1.00 per share	13,078,706,983
H Shares, par value RMB1.00 per share	3,943,965,968

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. Yes No

Note – Checking the box above will not relieve any registrant required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 from their obligations under those Sections.

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or an emerging growth company. See definition of "large accelerated filer," "accelerated filer," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer Non-accelerated filer Emerging growth company

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards† provided pursuant to Section 13(a) of the Exchange Act.

†The term "new or revised financial accounting standard" refers to any update issued by the Financial Accounting Standards Board to its Accounting Standards Codification after April 5, 2012.

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP
International Financial Reporting Standards as issued by the International Accounting Standards Board
Other

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow.

Item 17 Item 18

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes No

(APPLICABLE ONLY TO ISSUERS INVOLVED IN BANKRUPTCY PROCEEDINGS DURING THE PAST FIVE YEARS)

Indicate by check mark whether the registrant has filed all documents and reports required to be filed by Sections 12, 13 or 15(d) of the Securities Exchange Act of 1934 subsequent to the distribution of securities under a plan confirmed by a court.

Yes No

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Forward-Looking Statements

Certain information contained in this annual report, which does not relate to historical information, may be deemed to constitute forward-looking statements. The words or phrases “will likely result,” “are expected to,” “will continue,” “is anticipated,” “estimate,” “project,” “believe” or similar expressions are intended to identify “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Such statements are subject to certain risks and uncertainties that could cause actual results to differ materially from historical results and those presently anticipated or projected. You should not place undue reliance on any such forward-looking statements, which speak only as of the date made. These forward-looking statements include, without limitation, statements relating to:

- future general economic conditions;
- future conditions in the international and China capital markets;
- future conditions in the financial and credit markets;
- future prices and demand for our products;
- future PRC tariff levels for alumina and primary aluminum;
- sales of our products;
- the extent and nature of, and potential for, future developments;
- production, consumption and demand forecasts of bauxite, coal, alumina and primary aluminum;
- expansion, consolidation or other trends in the primary aluminum industry;
- the effectiveness of our cost-saving measures;
- future expansion, investment and acquisition plans and capital expenditures;
- the severity, duration and spread of the COVID-19 outbreak, as well as the direct and indirect impacts of COVID-19 pandemic (as well as the efforts to contain it) on our operations and financial performance, the industry we are in, our suppliers and customers, the PRC economy and global economy;
- competition;
- changes in legislation, regulations and policies;
- estimates of proven and probable bauxite reserves;
- our research and development plans; and
- our dividend policy.

These statements are based on assumptions and analyses made by us in light of our experience and our perception of historical trends, current conditions and future developments, as well as other factors we believe are appropriate in particular circumstances. However, whether actual results and developments will meet our expectations and predictions depends on a number of risks and uncertainties, which could cause actual results to differ materially from our expectations. These risks are more fully described in the section headed “Item 3. Key Information - D. Risk Factors.”

Consequently, all of the forward-looking statements made in this annual report are qualified by these cautionary statements. We cannot assure you that the actual results or developments anticipated by us will be realized or, even if substantially realized, that they will have the expected effect on us or our business or operations.

Certain Terms and Conventions

“**Chalco**,” “**the Company**,” “**the Group**,” “**our Company**,” “**our Group**,” “**we**,” “**our**” and “**us**” refer to Aluminum Corporation of China Limited and its subsidiaries and, where appropriate, to its predecessors;

“**A Share(s)**” and “**domestic share(s)**” refer to our domestic ordinary share(s), with a par value of RMB1.00 each, which are listed on the Shanghai Stock Exchange;

“**ADR(s)**” refers to the American Depositary Receipt(s);

“**ADS(s)**” refers to the American Depositary Share(s);

“**alumina-to-silica ratio**” refers to the ratio of alumina to silica in bauxite by weight;

“**aluminum fabrication**” refers to the process of converting primary aluminum or recycled aluminum materials into plates, strips, bars, tubes and other fabricated products;

“**Baotou Aluminum**” refers to Baotou Aluminum Co., Ltd., our wholly-owned subsidiary established under the PRC law;

“**Baotou Aluminum Group**” refers to Baotou Aluminum (Group) Co., Ltd., a subsidiary of Chinalco;

“**bauxite**” refers to a mineral ore that is principally composed of aluminum;

“**Bayer process**” refers to a refining process that employs a strong solution of caustic soda at an elevated temperature to extract alumina from ground bauxite;

“**Bayer-sintering combined process**” and “**Bayer-sintering series process**” refer to the two methods of refining process developed in China which involve the combined application of the Bayer process and the sintering process to extract alumina from bauxite;

“**Board**” refers to our board of directors;

“**Boffa Project**” refers to the project to develop and operate a bauxite mine located in Boffa, Guinea, in accordance with a mining convention entered into by Chalco Hong Kong, Chalco Guinea Company S.A. and the Guinean government on June 8, 2018;

“**CBEX**” refers to China Beijing Equity Exchange, an approved equity exchange for the transfer of state-owned assets;

“**Chinalco Assets**” refers to Chinalco Assets Operation and Management Co., Ltd., a wholly-owned subsidiary of Chinalco;

“**Chalco Energy**” refers to Chalco Energy Co., Ltd., our wholly-owned subsidiary established under the PRC law;

“**Chalco Hong Kong**” refers to Chalco Hong Kong Ltd., our wholly-owned subsidiary established under Hong Kong Law;

“**Chalco Liupanshui**” refers to Chalco Liupanshui Hengtaihe Mining Co., Ltd., 49% of the equity interest of which is owned by us;

“**Chalco Logistics**” refers to Chalco Logistics Group Co., Ltd., our wholly-owned subsidiary established under the PRC law;

“**Chalco Materials**” refers to Chalco Materials Co., Ltd., our wholly-owned subsidiary established under the PRC law;

“**Chalco Mining**” refers to Chalco Mining Co., Ltd., our wholly-owned subsidiary established under the PRC law;

“**Chalco Ruimin**” refers to Chalco Ruimin Company Limited, our subsidiary until June 2013 when we disposed of 93.30% of its equity interest to Chinalco;

“**Chalco Shandong**” refers to Chalco Shandong Co., Ltd., our wholly-owned subsidiary established under the PRC law;

“**Chalco Shanghai**” or “**Chinalco Shanghai**” refers to Chalco Shanghai Company Limited, our wholly-owned subsidiary established under the PRC law;

“**Chalco Southwest Aluminum**” refers to Chalco Southwest Aluminum Company Limited, our subsidiary until June 2013 when we disposed of 60% of its equity interest to Chinalco;

“**Chalco Southwest Aluminum Cold Rolling**” refers to Chalco Southwest Aluminum Cold Rolling Company Limited, our wholly-owned subsidiary until June 2013 when we disposed of its entire equity interest to Chinalco;

“**Chalco Trading**” refers to China Aluminum International Trading Co., Ltd., our wholly-owned subsidiary established under the PRC law;

“**Chalco Trading Group**” refers to China Aluminum International Trading Group Co., Ltd., our wholly-owned subsidiary established under the PRC law;

“**Chalco Xing County Alumina Project**” refers to the Bayer process production system and ancillary facilities at Xing County, Lvliang City of Shanxi Province with production capacity of 800,000 tonnes of metallurgical grade alumina per year;

“**China**” and the “**PRC**” refer to the People’s Republic of China, excluding, for purposes of this annual report, Hong Kong Special Administrative Region, Macao Special Administrative Region and Taiwan;

“**China Copper**” refers to China Copper Co., Ltd., a wholly-owned subsidiary of Chinalco;

“**China United Assets Appraisal**” refers to China United Assets Appraisal Group Co., Ltd., a PRC qualified valuer;

“**Chinalco**” refers to our controlling shareholder, Aluminum Corporation of China and its subsidiaries (other than Chalco and its subsidiaries) and, where appropriate, to its predecessors;

“**Chinalco Finance**” refers to Chinalco Finance Co., Ltd.;

“**CSRC**” refers to China Securities Regulatory Commission;

“**Dongdong Coal**” refers to Shaanxi Chengcheng Dongdong Coal Co., Ltd., 45% of the equity interest of which is owned by us;

“**Energy-Saving and Emission Reduction Goals**” refers to the energy-saving and emission reduction goals set out in China’s 13th Five-Year Plan for National Economic and Social Development laid out in 2016, in accordance with which China expects to, by the end of 2020, reduce its per unit GDP energy consumption by 15% compared with the 2015 level;

“**Exchange Act**” refers to the U.S. Securities Exchange Act of 1934, as amended;

“**Euro**” refers to the lawful currency of the Eurozone;

“**Fushun Aluminum**” refers to Fushun Aluminum Company Limited, our wholly-owned subsidiary established under the PRC law;

“**Gansu Hualu**” refers to Gansu Hualu Aluminum Company Limited, 51% of the equity interest of which is owned by us;

“**Gansu Huayang**” refers to Gansu Huayang Mining Development Company Limited, 70% of the equity interest of which is owned by us;

“**GNF**” refers to Guinea franc, the lawful currency of the Republic of Guinea;

“**Guangxi Investment**” refers to Guangxi Investment (Group) Co., Ltd., formerly known as Guangxi Development and Investment Co., Ltd., a PRC state-owned enterprise;

“**Guizhou Development**” refers to Guizhou Provincial Materials Development and Investment Corporation, a PRC state-owned enterprise and one of our promoters and shareholders;

“**Guizhou Huajin**” refers to Guizhou Huajin Aluminum Co., Ltd., 60% of the equity interest of which is owned by us;

“**Guizhou Huaren**” refers to Guizhou Huaren New Material Co., Ltd., 40% of the equity interest of which is owned by us;

“**Guizhou Yuneng**” refers to Guizhou Yuneng Mining Co., Ltd., 25% of the equity interest of which is owned by us;

“**H Share(s)**” refers to overseas listed foreign share(s) with a par value of RMB1.00 each, which are listed on the Hong Kong Stock Exchange;

“**Henan Aluminum**” refers to Chalco Henan Aluminum Company Limited, our subsidiary until June 2013 when we disposed of 90.03% of its equity interest to Chinalco;

“**HK\$**” and “**HK dollars**” refer to Hong Kong dollars, the lawful currency of the Hong Kong Special Administrative Region of the PRC;

“**Hong Kong Stock Exchange**” refers to The Stock Exchange of Hong Kong Limited;

“**Huaxi Aluminum**” refers to Huaxi Aluminum Company Limited, our subsidiary until June 2013 when we disposed of 56.86% of its equity interest to Chinalco;

“**Inner Mongolia Huayun**” refers to Inner Mongolia Huayun New Materials Co., Ltd., 50% of the equity interest of which is owned by Baotou Aluminum;

“**IRS**” refers to Internal Revenue Service of the United States federal government;

“**Japanese Yen**” refers to the lawful currency of Japan;

“**Jiaozuo Wanfang**” refers to Jiaozuo Wanfang Aluminum Manufacturing Co., Ltd.;

“**Ka**” refers to kiloamperes, a unit for measuring the strength of an electric current, with one kiloampere equaling 1,000 amperes;

“**kWh**” refers to kilowatt-hours, a unit of electrical power, meaning one kilowatt of power for one hour;

“**Lanzhou Aluminum**” refers to Lanzhou Aluminum Co., Ltd., our wholly-owned subsidiary since January 2019, which was previously our wholly-owned branch, Lanzhou branch;

“**Listing Rules**” and “**Hong Kong Listing Rules**” refer to the Rules Governing the Listing of Securities on the Hong Kong Stock Exchange, as amended;

“**LME**” refers to the London Metal Exchange Limited;

“**MIIT**” refers to Ministry of Industry and Information Technology of the PRC;

“**MOF**” refers to Ministry of Finance of the PRC;

“**mu**” refers to a unit of area commonly used in the PRC. 1 mu equals approximately 666.67 square meters;

“**MW**” refers to megawatt, a unit of electrical power;

“**Nanchu**” refers to ENanchu (<http://www.enanchu.com/>), a nonferrous metal-related portal site in PRC;

“**NDRC**” refers to China National Development and Reform Commission;

“**Ningxia Energy**” refers to China Aluminum Ningxia Energy Group Co., Ltd., formerly known as Ningxia Electric Power Group Co., Ltd., before we acquired 70.82% of its equity interest in January 2013;

“**Northwest Aluminum**” refers to Northwest Aluminum Fabrication Branch, our wholly-owned branch until June 2013 when we disposed of all its assets to a subsidiary of Chinalco;

“**NYSE**” and “**New York Stock Exchange**” refer to the New York Stock Exchange Inc.;

“**ore-dressing Bayer process**” refers to a refining process we developed to increase the alumina-to-silica ratio of bauxite;

“**PBOC**” refers to People’s Bank of China;

“**Qingdao Light Metal**” refers to Chalco Qingdao Light Metal Company Limited, our wholly-owned subsidiary until June 2013 when we disposed of its entire equity interest to Chinalco. In December 2017, we acquired 100% of the equity interest in Qingdao Light Metal through Chalco Shandong at a consideration of RMB300.4 million to further our prospective strategic layout on secondary aluminum;

“**Qinghai Energy**” refers to Qinghai Province Energy Development (Group) Co., Ltd., 21% of the equity interest of which is owned by us;

“**refining**” refers to the chemical process used to produce alumina from bauxite;

“**RMB**” and “**Renminbi**” refer to the lawful currency of the PRC;

“**SAT**” refers State Administration of Taxation of the PRC;

“**SAFE**” refers to State Administration of Foreign Exchange of the PRC;

“**SASAC**” refers to State-owned Assets Supervision and Administration Commission of the State Council of China;

“**SEC**” refers to the U.S. Securities and Exchange Commission;

“**Securities Act**” refers to the U.S. Securities Act of 1933, as amended;

“**Shandong Huayu**” refers to Shandong Huayu Alloy Material Co., Ltd., 55% of the equity interest of which is owned by us;

“**Shanxi Jiexiu**” refers to Shanxi Jiexiu Xinyugou Coal Industry Co., Ltd., 34% of the equity interest of which is owned by us;

“**Shanxi Huasheng**” refers to Shanxi Huasheng Aluminum Company Limited, 51% of the equity interest of which is owned by us;

“**Shanxi Huaxing**” refers to Shanxi Huaxing Aluminum Co., Ltd., a wholly-owned subsidiary established under the PRC law.

“**Shanxi New Material**” or “**Shanxi Huaze**” refers to Chalco Shanxi New Material Co., Ltd., formerly known as Shanxi Huaze Aluminum and Power Co., Limited, 85.98% of the equity interest of which is owned by us;

“**Shanxi Other Mines**” refers to the eight mines to which we entrusted another party to conduct mining activities, including Changjialing mine, Guxian mine, Loufan mine, Nanpo mine, Xishan mine, Yangjiashan mine, Niucaogou mine, Xiwupu mine and Jiaokou Xisongzhuang mine in Shanxi Province;

“**Shanxi Zhongrun**” refers to Shanxi China Huarun Co., Ltd., 43.39% of the equity interest of which is owned by us;

“**SHFE**” refers to the Shanghai Futures Exchange;

“**sintering process**” refers to a refining process employed to extract alumina from bauxite by mixing ground bauxite with supplemental materials and burning the mixture in a coal-fired kiln;

“**smelting**” refers to the electrolytic process used to produce molten aluminum from alumina;

“**tonne**” refers to the metric ton, a unit of weight, that is equivalent to 1,000 kilograms or 2,204.6 pounds;

“**US\$**,” “**dollars**” and “**U.S. dollars**” refer to the lawful currency of the United States;

“**Xinghua Technology**” refers to Chinalco Shanxi Jiaokou Xinghua Technology Ltd., 66% of the equity interest of which is owned by us;

“**Yangtze**” refers to the Shanghai Changjiang Nonferrous Metals Spot Market;

“**Yixin Aluminum**” refers to Heqing Yixin Aluminum Co., Ltd., an indirect subsidiary of Chinalco;

“**Yunnan Aluminum**” refers to Yunnan Aluminum Co., Ltd., an indirect subsidiary of Chinalco;

“**Yunnan SASAC**” refers to the State-owned Assets Supervision and Administration Commission of Yunnan Provincial People’s Government;

“**Zhangze Electric Power**” refers to Shanxi Zhangze Electric Power Co., Ltd., which owns 14.02% of equity interest in Shanxi New Material;

“**Zhengzhou Institute**” refers to Chalco Zhengzhou Research Institute of Non-ferrous Metal Co., Ltd., our wholly-owned subsidiary, which primarily provides research and development services;

“**Zhongzhou Aluminum**” refers to Chalco Zhongzhou Aluminum Co., Ltd., our wholly-owned subsidiary established under the PRC law;

“**Zunyi Alumina**” refers to Chalco Zunyi Alumina Co., Ltd., which was merged into Zunyi Aluminum in June 2018; and

“**Zunyi Aluminum**” refers to Zunyi Aluminum Co., Ltd., 67.445% of the equity interest of which is owned by us.

Translations of amounts in this annual report from Renminbi to U.S. dollars and vice versa have been made at the rate of RMB6.9618 to US\$1.00, the exchange rate as set forth in the H.10 statistical release of the Federal Reserve Board for December 31, 2019. We make no representation that any Renminbi or U.S. dollar amounts could have been, or could be, converted into U.S. dollars or Renminbi, as the case may be, at any particular rate, the rates stated below, or at all.

Any discrepancies in any table between the amounts identified as total amounts and the sum of the amounts listed therein are due to rounding.

PART I

Item 1. Identity of Directors, Senior Management and Advisors

Not applicable.

Item 2. Offer Statistics and Expected Timetable

Not applicable.

Item 3. Key Information

A. Selected Financial Data

Historical Financial Information

The following table presents our selected financial data. The selected consolidated statements of financial position data as of December 31, 2018 and 2019, and the selected consolidated statements of comprehensive income (except for earnings per ADS) and consolidated cash flow data for the years ended December 31, 2017, 2018 and 2019, are derived from our audited consolidated financial statements included elsewhere in this annual report, and should be read in conjunction with those consolidated financial statements. The selected consolidated statements of financial position data as of December 31, 2015, 2016 and 2017 and the selected consolidated statements of comprehensive income (except for earnings per ADS) and consolidated cash flow data for the years ended December 31, 2015 and 2016 are derived from our consolidated financial statements which are not included in this annual report. Our consolidated financial statements are prepared in accordance with International Financial Reporting Standards, or IFRS, as issued by the International Accounting Standards Board.

As the business combination under common control incurred in the years ended December 31, 2016, 2017, 2018 and 2019, the comparative financial data for the years ended December 31, 2015, 2016, 2017 and 2018 are revised to reflect the business combination under common control.

For the Year Ended December 31,

	2015	2016	2017	2018	2019	2019
	<i>RMB</i>	<i>RMB</i>	<i>RMB</i>	<i>RMB</i>	<i>RMB</i>	<i>US\$</i>
	<i>(in thousands, except share, per share and per ADS data)</i>					
Consolidated Statements of Comprehensive Income Data						
Revenue	123,924,333	144,855,997	181,022,636	180,241,414	190,074,161	27,302,445
Continuing Operations						
Cost of sales	(121,408,135)	(133,700,192)	(166,290,269)	(167,029,416)	(177,946,276)	(25,560,383)
Gross profit	2,516,198	11,155,805	14,732,367	13,211,998	12,127,885	1,742,062
Selling and distribution expenses	(1,798,154)	(2,111,787)	(2,372,966)	(2,496,933)	(1,673,139)	(240,331)
General and administrative expenses	(2,388,276)	(3,337,492)	(4,551,237)	(3,959,177)	(3,956,604)	(568,333)
Research and development expenses	(168,870)	(168,862)	(498,234)	(626,873)	(940,828)	(135,141)
Impairment loss on property, plant and equipment	(10,011)	(57,080)	(16,200)	(46,484)	(259,354)	(37,254)
Impairment losses on financial assets	—	—	—	(107,956)	(169,751)	(24,383)
Impairment losses on investments in joint ventures	—	—	—	(216,953)	—	—
Other income	1,787,774	155,576	89,873	135,367	79,469	11,415
Other gains, net	5,027,661	169,200	319,402	921,904	1,247,269	179,159
Operating profit from continuing operations	4,966,322	5,805,360	7,703,005	6,814,893	6,454,947	927,194
Finance costs, net	(5,167,030)	(4,204,179)	(4,496,732)	(4,390,262)	(4,660,028)	(669,371)
Operating (loss)/profit from continuing operations less finance costs	(200,708)	1,601,181	3,206,273	2,424,631	1,794,919	257,823
Share of profits and losses of joint ventures	23,238	(95,508)	8,151	(199,452)	270,115	38,800
Share of profits and losses of associates	284,531	115,091	(165,249)	39,335	48,767	7,005
Profit before income tax from continuing operations	107,061	1,620,764	3,049,175	2,264,514	2,113,801	303,628
Income tax (expense)/benefit from continuing operations	226,220	(403,871)	(643,706)	(822,519)	(625,720)	(89,879)
Profit for the year from continuing operations	333,281	1,216,893	2,405,469	1,441,995	1,488,081	213,749
Profit per share from continuing operations	0.01	0.02	0.09	0.03	0.04	0.01
Discontinued operation (loss)/profit for the year from discontinued operation	—	—	—	—	—	—
Profit for the year	333,281	1,216,893	2,405,469	1,441,995	1,488,081	213,749
Profit attributable to:						
Owners of the parent	118,241	365,800	1,413,221	707,460	850,999	122,238
Non-controlling interests	215,040	851,093	992,248	734,535	637,082	91,511
Dividends	—	—	—	—	—	—
Basic and diluted earnings per share	0.01	0.02	0.09	0.03	0.04	0.01
Number of shares as adjusted	14,903,798,236	14,903,798,236	14,903,798,236	16,842,713,738	17,022,672,951	17,022,672,951
Earnings per ADS	0.20	0.61	2.19	0.92	0.94	0.14
Dividends (expressed in RMB and US\$ per share and per ADS)						
Final dividends per share	—	—	—	—	—	—
Final dividends per ADS	—	—	—	—	—	—
Proposed dividends per share	—	—	—	—	—	—
Proposed dividends per ADS	—	—	—	—	—	—

As of December 31,

	2015	2016	2017	2018	2019	2019
	<i>RMB</i>	<i>RMB</i>	<i>RMB</i>	<i>RMB</i>	<i>RMB</i>	<i>US\$</i>
<i>(in thousands, except per share and per ADS data)</i>						
Consolidated Statements of Financial Position Data						
Total current assets	64,769,931	66,871,453	68,651,323	58,901,463	48,713,752	6,997,293
Total non-current assets	128,285,844	124,569,119	131,304,053	142,063,288	154,356,912	22,171,983
Total assets	193,055,775	191,440,572	199,955,376	200,964,751	203,070,664	29,169,276
Total current liabilities	82,476,318	83,761,221	90,436,239	74,836,777	69,169,728	9,935,610
Total non-current liabilities	58,496,815	51,670,923	43,737,107	58,458,355	63,175,876	9,074,647
Total liabilities	140,973,133	135,432,144	134,173,346	133,295,132	132,345,604	19,010,257
Net assets	52,082,642	56,008,428	65,782,030	67,669,619	70,725,060	10,159,019
Long-term interest bearing loans and borrowings (excluding current portion)	54,065,874	47,376,748	40,289,703	54,207,386	59,243,563	8,509,805
Capital stock	14,903,798	14,903,798	14,903,798	14,903,798	17,022,673	2,445,154

For the Year Ended December 31,

	2015	2016	2017	2018	2019	2019
	<i>RMB</i>	<i>RMB</i>	<i>RMB</i>	<i>RMB</i>	<i>RMB</i>	<i>US\$</i>
<i>(in thousands)</i>						
Other Financial Data						
Net cash flows generated from operating activities	7,339,551	11,609,110	13,207,140	13,032,076	12,473,489	1,791,705
Net cash flows (used in)/generated from investing activities	2,388,947	(2,638,951)	(5,598,131)	(5,529,105)	(13,392,301)	(1,923,684)
Net cash flows generated from/(used in) financing activities	(5,442,080)	(6,093,612)	(3,387,111)	(16,280,606)	(10,474,035)	(1,504,501)
Net increase/(decrease) in cash and cash equivalents	4,286,418	2,876,547	4,221,898	(8,777,635)	(11,392,847)	(1,636,480)

B. Capitalization and Indebtedness

Not applicable.

C. Reasons for the Offer and Use of Proceeds

Not applicable.

D. Risk Factors

Our business and financial condition and results of operations are subject to various changing business, competitive, economic, political and social conditions in China and worldwide. In addition to the factors discussed elsewhere in this annual report, the following are some of the important factors that could cause our actual results to differ materially from those projected in any forward-looking statements.

Our business may be materially and adversely affected by the recent outbreak of COVID-19.

Since the end of 2019, COVID-19, a disease caused by a novel strain of coronavirus, has spread in China and globally, and the World Health Organization declared the COVID-19 outbreak a pandemic in March 2020. The COVID-19 outbreak has led the governments and other authorities around the world, including China, to impose measures intended to control its spread, including quarantines, restrictions on travel and public gatherings, temporary closure of certain businesses and facilities. While still evolving, the COVID-19 pandemic, as well as efforts to contain it, has caused significant economic and financial disruptions around the world, including disruption on manufacturing operations, logistics and global supply chains and significant volatility and disruption of financial markets. Although currently in China, many restrictions have been lifted and the level of business activities are being restored in response to the significant decrease of new reported cases in China, the above mentioned conditions may continue and worsen globally in the near or longer term. The COVID-19 outbreak could materially and adversely affect our business, financial condition and results of operations.

Due to the outbreak and governmental control measures imposed to contain virus spread, we experienced temporary restrains on our operations, such as temporary interruptions on transportation in certain areas in February and some employees' temporary delay in their returning to work after the Chinese New Year holiday. We have been proactively taking measures to respond to these restrains, including measures to protect the health and safety of our employees, and by far such measures have helped in maintaining our steady production. However, if the virus further spreads worldwide, including in China or other jurisdictions in which we, our suppliers or customers operate or have property or projects, or further control measures are adopted and continue to stay in place in these or other regions, we may face further disruptions on our normal operation, sales, project construction, supply chain and transportation channel, labor shortage and other limitations on our business activities due to restrictions on our employees' ability to travel, infection of management and employees, suspension or closure of facilities, additional costs arising from precautionary infection control and hygienic measures, and other impacts, which could be material and adverse to our business, financial condition and results of operations.

In addition, the market prices of primary aluminum and alumina have been volatile and significantly decreased since the COVID-19 outbreak. In the first quarter of 2020, the range for the high and low prices for the Australian FOB spot price for alumina and the international cash price for primary aluminum on the LME decreased to a high of US\$304 per tonne and a low of US\$252 per tonne and a high of US\$1,811 per tonne and a low of US\$1,489 per tonne, respectively. During the same period, the spot price of alumina in the domestic market reached a high of RMB2,581 per tonne and bottomed out at RMB2,344 per tonne, and the spot price of primary aluminum reached a high of RMB14,700 per tonne and a low of RMB11,310 per tonne on SHFE. See “- Volatility in the prices of alumina, primary aluminum, other non-ferrous metal and other commodities may adversely affect our business, financial condition and results of operations” and “Item 5. Operating and Financial Review and Prospects - A. Operating Results - Factors Affecting Our Results of Operations - Mix and Pricing of Our Products” for information of the historical prices of 2019 and prior years. Such decreases may continue for a prolonged period or further deteriorate, which may, among other things, cause additional provision for our inventories' value and negatively impact our revenue and profit level. Furthermore, due to the reduction in the downstream business activities resulting from the COVID-19 outbreak, demand for primary aluminum have been generally weakened and may further decline, which may result in reduction of our revenue and profit, increase of our inventory amount and other material and adverse impacts on our financial condition and results of operations. We have been closely monitoring the development of the COVID-19 outbreak and evaluating market changes and impact of the COVID-19 outbreak on our businesses, operations and financial performances, as well as actively responding to the possible impact on us. For example, in response to the price volatility of primary aluminum and alumina, we have been adjusting, or may adjust, the structure of our product portfolio, the amount of inventories and our marketing strategies, and we may utilize futures transactions to hedge against price fluctuations. However, there is no assurance that our efforts would be successful, and given that the COVID-19 outbreak is still evolving around the world, its full impact on us may be difficult to predict at this time.

The global spread of COVID-19 has significantly increased economic and demand uncertainty and has fueled concerns that it may lead to a global recession and a significant slowdown in the economic development in many countries including China. Despite the Chinese government's efforts in reviving China's economy, China's economy has experienced a significant slowdown since the COVID-19 outbreak, and there remains uncertainty on how soon economic activity in China will rebound to the level prior to the COVID-19 pandemic. The global economy may continue to deteriorate in the future and have an adverse impact on China's economy, which may, among other things, exacerbate turbulence in commodity market, discourage or disrupt investment and production, increase total inventories of primary aluminum or other products in the industry, bring more uncertainty to the consumption of aluminum-made products and the prices of primary aluminum and alumina, and cause other adverse impacts on the industry we are in. An economic downturn including financial market disruption, or a market perception that this situation may occur or develop, may also cause increase of financing costs, or reduce or even diminish available sources of financing for operation or expansion. In addition, significant financial market volatility and uncertainty may adversely affect the market prices of our ordinary shares and ADSs. Credit risks of customers and suppliers and other counterparty risks may also increase. These factors may materially and adversely affect our business, financial condition and results of operations.

There is significant uncertainty relating to future developments of the COVID-19 outbreak and its impact on us. At this time, it is not possible to estimate the effects that the COVID-19 outbreak could have on the global and China's economy, political and social relationships of different countries, financial markets, the industries we are in, our suppliers or customers or our businesses and operations. Our business, financial condition and results of operations could therefore be materially and adversely affected by it. We may also experience negative effects from other future health epidemics or outbreaks beyond our control. These events are impossible to forecast and difficult to mitigate. Any of these events could have a material adverse effect on our results of operations and financial condition.

Our business is vulnerable to downturns in the general economy and industries in which we operate or which we serve. A significant reduction in demand could materially and adversely affect our business, financial condition and results of operations.

Demand for our products depends on the general economy and level of activity and growth in the industries where we operate or serve. Adverse development in economic and market conditions, such as a significant economic downturn or a downturn in the commodity sector or the financial markets, could have a material adverse effect on our business, financial condition, results of operations and the price of our ordinary shares or ADSs. Development of the relevant industries is subject to various factors, including but not limited to market fluctuations of prices of commodities, general political or economic conditions, technology development, government regulations and investment plans and fluctuation in domestic and global production capacity, many of which are beyond our control.

We are unable to predict cycles of the global and domestic economies. Concerns over inflation, energy costs, geopolitical issues, trade tensions, the availability and cost of credit, unemployment, consumer confidence, declining asset values, capital market volatility and liquidity issues have created difficult operating conditions for us in the past and may continue to do so in the future. For example, since 2018, there were continuing trade tensions between the U.S. and China, resulting in increased tariffs and escalating tensions between the two countries. On January 15, 2020, the two parties signed the China-U.S. phase-one economic and trade agreement. It is still unclear when future phase negotiations between the two countries will begin and whether there will be further trade agreements following such negotiations. It is also unclear if future disputes will occur or the two countries will be able to negotiate the issues to restore a mutually beneficial economic and trade cooperation. Future actions or escalations by either the U.S. government or the PRC government could have a material adverse effect on the business environment in general, global, Chinese and/or U.S. economic conditions and the stability of global, Chinese and/or U.S. financial markets, which in turn, may adversely affect our business, financial condition and results of operations. Furthermore, the PRC government has, from time to time, adjusted its monetary, fiscal and other policies and measures to manage the rate of growth of the economy or the overheating and overcapacity in certain industries or markets. In addition, the global outbreak of COVID-19 and the efforts to contain it have negatively impacted the global economy and financial markets, potentially causing a global recession. For further details of the impact of outbreak of COVID-19 on the general economy, please refer to “- Our business may be materially and adversely affected by the recent outbreak of COVID-19.” As a result, the global and domestic economic conditions or any particular industry in which we operate or which we serve may grow at a lower-than-expected rate or even experience a downturn. Uncertainty about future economic conditions makes it challenging for us to forecast our results of operations, make business decisions and identify risks that may affect our business. If we are not able to timely and appropriately adapt to changes resulting from the difficult macroeconomic environment, our business, financial condition and results of operations may be materially and adversely affected.

Volatility in the prices of alumina, primary aluminum, other non-ferrous metal and other commodities may adversely affect our business, financial condition and results of operations.

The prices of the products we produce and trade, including alumina, primary aluminum, other non-ferrous metal and coal products, have experienced significant fluctuation historically and are expected to continually fluctuate in response to general economic conditions, supply and demand, the level of inventories, interruption caused by unforeseen international or domestic events such as global outbreak of COVID-19, uncertainty of or changes in domestic or foreign laws or policies and many other factors, which are beyond our control.

We price our alumina and primary aluminum products by reference to international and domestic market prices, and domestic supply and demand, each of which may fluctuate beyond our control. We may not be able to effectively respond to a sudden fluctuation in alumina or primary aluminum prices. For example, due to the general slowdown of the global economy and overcapacity of global aluminum industry beginning in 2015, the range for the high and low prices for the Australian FOB spot price for alumina and the international cash price for primary aluminum on the LME declined in 2016 to a high of US\$350.5 per tonne and a low of US\$197.0 per tonne and a high of US\$1,778 per tonne and a low of US\$1,449 per tonne, respectively. However, due to global economic recovery and adjustment of production capacity in the PRC primary aluminum industry as a result of the supply-side structural reform carried out by the PRC government, the range for the high and low prices for the Australian FOB spot price for alumina and the international cash price for primary aluminum on the LME increased in 2017 to a high of US\$484 per tonne and a low of US\$272 per tonne and a high of US\$2,256 per tonne and a low of US\$1,700 per tonne, respectively. Due to supply shortage in the global aluminum and alumina market, the range for the high and low prices for the Australian FOB spot price for alumina and the international cash price for primary aluminum on the LME further increased in 2018 to a high of US\$710 per tonne and a low of US\$357 per tonne and a high of US\$2,603 per tonne and a low of US\$1,869 per tonne, respectively. However, due to the uncertainties and the sluggish global economy as the result of, among other things, intensified trade and geopolitical tensions, as well as the increased overseas alumina production, and the weak consumption and the recovered and increased production capacity in the overseas primary aluminum market in 2019, the range for the high and low prices for the Australian FOB spot price for alumina and the international cash price for primary aluminum on the LME decreased in 2019 to a high of US\$418 per tonne and a low of US\$275 per tonne and a high of US\$1,922 per tonne and a low of US\$1,696 per tonne, respectively. In 2019, the average external selling prices for our self-produced alumina and primary aluminum were RMB2,735 per tonne and RMB13,861 per tonne respectively in 2019, representing decreases by 6.4% and 3.5%, respectively, as compared to the prices in 2018. The prices of the products we produce and trade have further decreased due to the recent global outbreak of COVID-19, please refer to “- Our business may be materially and adversely affected by the recent outbreak of COVID-19” for further details. Furthermore, the prices of alumina and primary aluminum may also decline due to, among other things, decrease in market demand of those products and any slowdown of economic growth in China. Because our prices are affected by a variety of factors, most of which are beyond our control, we may not be able to respond promptly to the fluctuation in alumina or primary aluminum prices in international market or domestic market. There is no assurance that there will not be any further and significant fluctuations in prices of our key products, including alumina and primary aluminum, which may materially and adversely affect our business, financial condition and results of operations. In addition, since our profit margin for trading non-ferrous metal products and coal products is based on price fluctuations in the short term, we need to make the correct prediction of the price fluctuations of these commodities on the markets to maintain our profit margin. If market price fluctuations on the market do not match our prediction, we may incur substantial losses.

In addition, as we generate profit from the differences between the purchase and sales prices of the non-ferrous metal products and the coal products we deal in, significant fluctuations in these prices may cause the value of the outsourced products in transit or in inventory to decline, and if the carrying value of our existing inventories exceeds the market price in the future periods, we may need to make additional provisions for our inventories' value, which may have a material and adverse effect on our profit level and other financial performance. See Note 12 to our audited consolidated financial statements for information about our inventories. As a result, any significant fluctuation in market prices for these commodities could materially and adversely affect our business, financial condition and results of operations.

Our business requires substantial capital expenditures that we may not always be able to obtain at reasonable costs and on acceptable terms.

Our plans to upgrade and expand our production capacity will require substantial capital expenditures. For the years ended December 31, 2017, 2018 and 2019, our total capital expenditures were approximately RMB10.1 billion, RMB9.1 billion and RMB13.0 billion, respectively. We expect our estimated capital expenditures in 2020 to be a total of approximately RMB13.9 billion. See “Item 4. Information on the Company - D. Property, Plants and Equipment - Our Expansion” and “Item 5. Operating and Financial Review and Prospects - B. Liquidity and Capital Resources - Capital Expenditures and Capital Commitments” for details of our expansion and capital expenditures. We may also need additional funding for debt servicing, working capital, other investments, potential acquisitions and joint ventures and other corporate requirements.

We may need to seek external financing, such as bank and other loans as well as bond offerings, to satisfy our capital needs if cash generated from our operations is insufficient to fund our capital expenditures or if our actual capital expenditures and investments exceed our plans. Our ability to obtain external financing at reasonable costs and on acceptable terms is subject to a variety of factors, such as our credit ratings, financial market conditions and our past or projected financial performance. Rating agencies may downgrade or withdraw our ratings or place us on “credit watch” based on their assessment of a wide range of factors. For example, records of net losses may result in a deterioration of our credit ratings. Although we were profitable in the recent period from 2015 through 2019, we recorded a net loss of approximately RMB17.1 billion in 2014 and have been recording accumulated losses since 2014. Our accumulated losses were approximately RMB2,216.9 million in 2019. We could incur losses in the future, which may adversely affect our corporate ratings and increase our borrowing costs and limit our access to capital markets. Other factors that may be viewed as negative by the rating agencies may also adversely affect our corporate ratings, such as any significant decrease of market price of our products, any significant increase in our level of debt, any negative development in our ongoing or planned projects and so on. In addition, if financial markets experience significant volatility and disruption, it may result in a decrease in the availability of liquidity and credit for borrowers and increase in interest rate or other financing cost. Failure to obtain sufficient funding at reasonable costs and on acceptable terms for our development plans could delay, reduce the scope of, or eliminate future activities or growth initiatives and adversely affect our business and prospects.

Our previous adjustments of our business segments and historical results may not be indicative of our future prospects.

In 2013, we entered into a new business segment, the energy segment, through acquisition of Ningxia Energy. In the past few years, we have streamlined our existing business to focus on the productions of alumina and primary aluminum. For instance, in December 2018, we acquired 50% equity interests in Shanxi Huaxing through the Shanghai United Assets and Equity Exchange at a price of approximately RMB2,665.2 million from Baotou Transportation Investment Group Co., Ltd. Upon completion of the acquisition, Shanxi Huaxing became a wholly-owned subsidiary of the Company. The acquisition is conducted for purposes of enhancing our profitability and is in line with our strategic layout of alumina and aluminum business, as the increase of our shareholding in Shanxi Huaxing, an alumina plant, is expected to enhance the synergy with our primary aluminum production in Shanxi, where we have newly added production capacity of primary aluminum. For further details of the acquisition, please see “Item 4. Information on the Company - A. History and Development of the Company.”

There is no assurance that we will enter into a new business segment or continue to streamline our existing business as we have done so in the past. Moreover, we cannot assure you that the benefit of entering into a new business segment or streamlining our existing business will be fully realized as expected or at all.

In addition, we have experienced growth in recent years. For example, our revenues for 2017, 2018 and 2019 were RMB181,022.6 million, RMB180,241.4 million and RMB190,074.2 million, respectively. However, such performance was driven by a wide range of factors, many of which are out of our control or may not be sustainable or indicative of future growth or performance, such as the prices of coal, electricity and other raw materials. No assurance can be given that our financial conditions or results of operations will be maintained at any level, especially due to impact of the outbreak of COVID-19. For further details, please refer to “- Our business may be materially and adversely affected by the recent outbreak of COVID-19.” As a result, our historical results may not be indicative of our future prospects and results of operations.

Our failure to successfully manage our business expansion, including our expansion into new areas of business, would have a material adverse effect on our results of operations and prospects.

We have made investments in business expansion in line with our development strategy through organic growth, acquisitions and joint ventures. In addition, we may, from time to time and when we deem appropriate, expand into new industries which we believe have synergies with our existing operations.

Our expansion has created, and will continue to place, substantial demand on our resources. Managing our growth and integrating the acquired businesses will require us to, among other things:

- comply with the laws, regulations and policies applicable to the acquired businesses, including obtaining timely approval for the construction or expansion of production and mining facilities as required under the relevant laws of PRC and foreign jurisdictions;
- maintain adequate control on our business expansion to prevent, among other things, project delays or cost overruns;
- accumulate expertise and experience in managing the new businesses;
- gain market acceptance for new products and services and establish relationships with new customers and suppliers;
- achieve sufficient utilization of new production facilities to recover costs;
- manage relationships with employees, customers and business partners during the course of our business expansion and integration of new businesses;
- attract, train and motivate members of our management and qualified workforce to support successful business expansion;
- access debt, equity or other capital resources to fund our business expansion, which may divert financial resources otherwise available for other purposes;
- divert significant management attention and resources from our other businesses; and
- strengthen our operational, financial and management controls, particularly those of our newly acquired subsidiaries, to maintain the reliability of our reporting processes.

Any significant difficulty in meeting the foregoing or similar requirements could delay or otherwise constrain our ability to implement our expansion plans, or result in failure to achieve the expected benefits of the combination or acquisition or write-offs of acquired assets or investments, which in turn would limit our ability to increase operational efficiency, reduce marginal manufacturing costs or otherwise strengthen our market position. Failure to obtain the intended economic benefits from the business expansion could adversely affect our business, financial condition, results of operations and prospects. In addition, we may also experience mixed results from our expansion plans in the short term.

Furthermore, there is no assurance that we will be able to identify attractive acquisition targets, obtain favorable deal terms in any acquisition, secure applicable governmental approvals for any proposed investments, accurately estimate the mineral resources and reserves of these acquisition targets or obtain the necessary funding to complete such acquisitions on commercially acceptable terms or at all. Acquisitions may result in the incurrence and inheritance of debts and other liabilities, assumption of potential legal liabilities in respect of the acquired businesses, and incurrence of impairment charges related to goodwill and other intangible assets, any of which could harm our business, financial condition and results of operations. In particular, if any of the acquired businesses fail to perform as we expect, we may be required to recognize a significant impairment charge, which may materially and adversely affect our business, financial condition and results of operations. As a result, there can be no assurance that we will be able to achieve the strategic purpose of any acquisition, the desired level of operational integration or our investment return target.

Our joint ventures and strategic investments may not be successful.

We may from time to time enter into joint ventures or make strategic investments to grow our business and operations. For example, since 2010, we have participated in joint ventures and strategic investments in coal mining, in line with our development strategy to diversify our product offering and partially offset our future energy costs. In addition, we have acted as joint venture partner or strategic investor in certain projects which engage in primary aluminum and aluminum alloy manufacturing to diversify our product offering, strategically position ourselves along the industrial chain and facilitate our enterprise transformation and upgrade. If our joint ventures, strategic investments or other investments experiences fluctuation in performance or incur losses, our business, financial condition and results of operations may be adversely affected. For further details of certain of our joint ventures and strategic investments, please see “Item 4. Information on the Company - A. History and Development of the Company” and “Item 4. Information on the Company - D. Property, Plants and Equipment – Our Expansion.”

We have non-controlling interests in a number of joint ventures. Although we have not been materially constrained by the nature of our ownership interests, no assurance can be given that our joint venture partners will not exercise their power of veto or their controlling influence in any of our joint ventures in a way that will hinder our corporate objectives and reduce any anticipated cost savings or revenue enhancement resulting from these joint ventures. In addition, whether or not we hold majority interests or maintain operational control in such joint ventures, such arrangements necessarily involve special risks and our joint venture partners may:

- have economic or business interests or goals that are inconsistent with or opposed to ours;
- exercise veto rights so as to block actions that we believe to be in our or the joint venture’s best interests;
- take action contrary to our policies or objectives with respect to the investments; or
- as a result of financial or other difficulties, be unable or unwilling to fulfill their obligations under the joint venture, other agreements, such as contributing capital to expansion or maintenance projects.

In addition, our joint ventures and subsidiaries which operate coal mines were facing increasing risks in recent years. Due to increased market supplies resulting from the increase of the domestic capacity and influx of imported coal, as well as the substitution effect of thermal power by hydroelectricity and other renewable energy, the coal prices generally declined in 2019. If coal prices continue to decrease in the future, the business, financial condition and results of operations of these joint ventures which operate coal mines may be adversely affected.

Failure to maintain optimal utilization of our production facilities will adversely affect our gross and operating margins.

During the past few years, we expanded the production capacity by completing our construction, upgrading or remodeling of some of our alumina and primary aluminum production facilities. If we are able to maintain satisfactory facility utilization rates and increase our production output, this increase in our production capacity would enable us to reduce our unit costs through economies of scale, as fixed costs will be spread over a higher volume of output units. Conversely, underutilization of our existing and newly acquired or constructed production facilities may increase our marginal production costs and prevent us from realizing the intended economic benefits of our expansion.

Since 2013, we have implemented flexible production arrangements from time to time for certain alumina and primary aluminum production facilities in response to prevailing market conditions and government policies. For example, as a result of high electricity costs, we have implemented flexible production arrangements for certain primary aluminum production facilities in Liancheng branch since November 2018. In addition, we may increase our external purchases of alumina and primary aluminum for trading purposes to capitalize on fluctuating market prices and to enhance resource planning to achieve cost savings in our production. The increase in our external purchases will reduce our utilization of certain production facilities, but may not result in a proportionate decrease in fixed costs such as leases and depreciation of plant, property and equipment.

If we fail to maintain optimal utilization rates and spread fixed costs over a high volume of output units, our gross and operating margins may be adversely affected.

We may be required to record impairment charges in the future.

If business conditions deteriorate, long lived assets need to be reviewed for possible impairment. Impairment loss needs to be recognized to the extent that the carrying amount exceeds the recoverable amount. In 2017, 2018 and 2019, we recorded impairment loss of property, plant and equipment of RMB16.2 million, RMB46.5 million and RMB259.4 million, respectively. We also recorded impairment losses of intangible assets of RMB8.1 million and RMB1.4 million in 2017 and 2019, respectively. We cannot guarantee that we will not incur any impairment loss or our impairment loss will not increase in the future due to various reasons including, but are not limited to, strategic decisions made in response to changes in economic and competitive conditions, the impact of the economic environment on our customer base and material adverse changes in our relationship with significant customers. If we record significant impairment charges, our results of operations may be materially and adversely affected.

Our operations consume substantial amounts of electricity, and our profitability may decline if electricity costs rise or if our electricity supplies are interrupted.

Our operations consume substantial amounts of electricity. Although we generally expect to meet the electricity consumption requirements for our alumina refineries and primary aluminum smelters from a combination of internal and external sources, our results of operations may be materially and adversely affected by any significant increase in electricity costs or interruptions in electricity supply.

Cost of electricity is the principal production cost in our primary aluminum operations. As a result of the decrease in outsourced electricity price resulting from our negotiation with electric power plants and the adjustments of our production capacity of primary aluminum, including halting the primary aluminum production by Shandong Huayu and Shanxi Huasheng, which smelters used to incur relatively high electricity costs, our average electricity cost per kWh (including tax) of our primary aluminum smelters decreased by approximately 4% from 2018 to 2019. However, there is no assurance that we will be able to continuously succeed in electricity price negotiation or further adjust the production capacity of primary aluminum to lower the electricity costs, or that any factor beyond our control will not result in any increase in the price of electricity. If we are unable to pass on increases in energy costs to our customers, our operating margin, financial condition and results of operations could be materially and adversely affected.

In addition, interruptions in the supply of electricity can result in costly production shutdowns, increased costs associated with restarting production and the waste of production in progress. A sudden loss of electricity, if prolonged, can cause damage to or the destruction of production equipment and facilities. In such an event, we may need to expend significant capital and resources to repair or replace the affected production equipment to restore our production capacity. In the past, various regions across China experienced shortages and disruptions in electricity supply, especially during peak demand summer season or under severe weather conditions. We cannot assure you that our operations will not suffer from shortages or disruptions in electricity supply, the occurrence of which could have a material adverse impact on our business, financial condition and results of operations.

Our operations consume substantial amounts of coal, and our operations may be adversely affected if we are not able to procure sufficient coal or if coal prices rise significantly.

We rely heavily on coal as our energy and fuel source in our operations. As we increase our alumina refining capacity, our consumption of coal will increase accordingly. If we are not able to obtain the amount of coal needed for our production due to a shortage of coal, constraints on coal transportation or any other reason, we may be forced to reduce our production output or suspend our alumina refining operations, which could materially and adversely affect our financial condition and results of operations. Although we have acquired equity interest in a number of coal mines, we expect to continue to rely substantially on third-party coal suppliers for the supply of coal. Our average purchase price per unit tonne of thermal coal decreased by approximately 12.4% in 2019 from the level in 2018. However, there is no assurance that the coal prices will not increase or further fluctuate. If we are unable to pass on increases or otherwise significant fluctuations in coal prices to our customers or offset price increases through productivity improvements, our operating margin, financial condition and results of operations could be adversely affected.

Our business and industry may be affected by the development of alternative energy sources and climate change.

Our operations consume substantial amounts of coal. Coal combustion generates significant greenhouse gas and other pollutants, and the effects of climate change resulting from global warming and increased pollution levels may provide incentives for governments to promote or invest in “green” energy technologies such as wind, solar, nuclear and biomass power plants, or to reduce their consumption of conventional energy sources such as coal. A number of governments or governmental bodies have introduced or are contemplating legislative and regulatory changes in response to the potential impacts of climate change. These regulatory mechanisms may impact our operations directly or indirectly through our customers or supply chain. We may have to increase our capital expenditures in order to comply with such revised or new legislation or regulations, and changes to our profit or loss may occur due to increased or decreased demand for our products and indirectly due to changes in costs of goods sold, which may adversely affect our results of operations and financial condition.

In addition, we have invested in coal mining operations. Although revenues attributable to our energy segment accounted for only approximately 3.7% of our total revenues in 2019 (after elimination of inter-segment sales), we might still be affected by any change on the PRC thermal power industry, which relies on coal as main source of fuel. The PRC thermal power industry may be affected by the development of alternative energy sources, climate change and global environmental factors. In particular, pursuant to China’s 13th Five-Year Plan for Environmental Protection, the PRC government plans to continue to encourage the development of alternative energy sources, such as wind power, solar power, biomass and geothermal energy, from 2016 to 2020. As such, alternative energy industries may rapidly develop and gradually gain mainstream acceptance in the PRC and the rest of the world. If alternative energy technologies continue to develop and prove suitable for wide commercial application in the PRC and overseas, demand for conventional energy sources, such as coal, could be reduced. Such reduction in demand for coal could have a material adverse effect on the coal mining industry and, consequently, negatively affect our business, results of operations and financial condition.

We may not be able to continue competing successfully in the markets in which we operate.

In 2019, we supplied approximately 48% of our total production of alumina to our own smelters and sold substantially all of the remaining self-produced alumina and all of our self-produced primary aluminum to our domestic customers. Our alumina (with chemical alumina products included) and primary aluminum production represented approximately 21.9% and 10.5%, respectively, of total domestic production in China in 2019. We face competition from both domestic and international alumina and primary aluminum producers. Our principal competitors are major domestic refineries and smelters. These producers compete with our alumina and primary aluminum operations on the basis of product cost, quality and pricing. In addition, we face increasing competition from international alumina and primary aluminum suppliers as a result of the elimination of tariffs on imports of primary aluminum and alumina into China. See “Item 4. Information on the Company - B. Business Overview - Competition” for further details.

Increasing competition in our product markets may reduce our selling prices or sales volumes, which will have a material adverse effect on our financial condition and results of operations. If we are unable to price our products competitively, maintain or increase our current share of China’s alumina and primary aluminum markets or otherwise maintain our competitiveness, our financial condition, results of operations and profitability could be materially and adversely affected.

Our overseas expansion exposes us to political and economic risks, commercial instability and events beyond our control in the countries in which we plan to operate.

We are currently undertaking a couple of overseas projects. For example, we are in the process of construction of the Boffa Project in Guinea. Due to uncertainties involved in the overseas projects, we cannot assure you that our overseas expansion or investments will be successful or that we will not suffer foreign exchange losses in connection with our overseas investment. For example, in April 2019, the Laos government cancelled the exploration rights of the bauxite mines held by Lao Service Mining Co., Ltd., in which we held 60% of the equity interest, as it had not continuously carried out related activities in the past years.

In addition, operations in the overseas markets also expose us to a number of risks including expropriation and nationalization of our assets in foreign countries, civil unrest, acts of terrorism, war, or other armed conflict; shortages of construction equipment and materials; severe weather conditions; social security, public health and safety, labors and construction safety and similar issues; epidemic diseases and infectious diseases; natural disasters; inflation; currency fluctuations, devaluations and conversion restrictions; confiscatory taxation or other adverse tax policies, governmental activities that limit or disrupt markets, restrict payments or limit the movement of funds, governmental activities that may result in the deprivation of contractual rights; lack of a well-developed legal system that makes it difficult to enforce our contractual rights; uncertainties in laws and policies; and governmental activities that may result in the inability to obtain or retain licenses required for operations.

Our profitability and operations could be adversely affected if we are unable to obtain a steady supply of raw materials at competitive prices.

Historically, the price for bauxite, our most important raw material for alumina production, has been volatile. We obtain bauxite for our operations from our mines and external suppliers. See “Item 4. Information on the Company - B. Business Overview - Raw Materials - Alumina - Supply.” The extents to which we procure bauxite from each of these sources affect the security of our supply or cost of bauxite. The supply of bauxite could be affected by various factors, including geographic conditions of bauxite mines, government policies, market prices and competition, many of which are beyond our control. We rely on overseas suppliers to obtain a portion of bauxite we use for production. Indonesia used to be a major source of our imported bauxite. As a result of the ban imposed by the Indonesia Government on the exportation of unprocessed bauxite and nickel, since January 2014, we have not been able to export the bauxite produced by our bauxite mines in Indonesia for the use of our alumina refineries in China, and our operation of bauxite mining in Indonesia has been suspended since September 2014. See “Item 4. Information on the Company - B. Business Overview - Raw Materials - Alumina – Own Mines” for more details of our bauxite mines in Indonesia. If we exhaust our stockpiles or our procurement of bauxite from external suppliers are interrupted for any reasons, and cannot find an alternative source of bauxite at competitive prices, our financial condition, results of operations and profitability could be adversely affected.

In addition, our results of operations can be affected by increases in the cost of other raw materials and other key inputs such as energy. If we cannot obtain a steady supply of key raw materials at competitive prices, our financial condition and results of operations could be materially and adversely affected.

Any transportation interruption or any material increase in our transportation costs could have a material adverse effect on our business, financial condition and results of operations.

Our operations require the reliable transportation of raw materials and supplies to our refining and smelting sites and finished products to our customers. Our alumina products are mainly transported by rail or trucks and our primary aluminum products are delivered to our customers primarily by rail. There is no assurance that we can always enjoy sufficient transportation capacity or we will not experience transportation interruption in the future. Furthermore, natural disasters, severe weather conditions and outbreak of epidemic diseases and infectious diseases may cause interruption to the transportation system, which could in turn affect the transportation of our products. Please refer to “- Our business may be materially and adversely affected by the recent outbreak of COVID-19” for further details of the impact of outbreak of COVID-19 on the transportation system. In addition, any changes in fuel prices or fuel supply may be unpredictable and beyond our control. There is no assurance that shortage of fuel will not occur in the future. Any surge in fuel prices or shortage of fuel supply may lead to increases in our operation and transportation costs. If we are unable to make timely deliveries due to logistical and transportation disruptions, or transfer the increased costs to our customers, our production, reputation and results of operations may be adversely affected.

The bauxite reserve data in this annual report are only estimates, which may prove to be inaccurate.

The bauxite reserve data based on which we prepare our production and expenditure plans are only estimates that we have developed internally and may prove to be inaccurate. There are numerous uncertainties inherent in estimating quantities and qualities of reserves, including many factors beyond our control. If these estimates are inaccurate or the indicated tonnages are not recovered, our business, financial condition, and results of operations may be materially and adversely affected.

Our mining operations have limited mine lives and eventual closure of these operations will entail costs and risks regarding ongoing monitoring, rehabilitation and compliance with environmental standards.

Our existing mining operations in the PRC and overseas have limited mine lives and will eventually be depleted. We need to perform certain procedures to remedy and rehabilitate the environmental and social impact that our mining operations have had on local communities and the environment. Remediation, rehabilitation, closure and removal of our facilities will incur various costs and are subject to various risks. The key costs and risks for mine closures include, among others, (i) long-term management of permanent engineered structures and acid rock drainage; (ii) closure in accordance with local or international environmental standards; (iii) orderly retrenchment of employees and third-party contractors; and (iv) orderly transfer of the site, its associated permanent structures and community development infrastructure and programs to new owners. There is no assurance that such closure of mines will be successful and without delays or additional costs, in which case we may be subject to increased costs, penalties or other legal or administrative actions, damages to reputation, or even suspension and cancellation of mining permits, the occurrence of which would cause a material adverse effect on our business, financial condition and results of operations.

Failure to discover new reserves or resources, maintain or enhance existing reserves or resources, develop new mining operations or expand our current mining operations could negatively affect our business, financial condition and results of operations.

Mining exploration is unpredictable in nature. The success of any mining exploration program depends on various factors, many of which are beyond our control. Due to the unpredictable and speculative nature of the mining industry, there is no assurance that any exploration program that we are currently undertaking or may undertake in the future will result in the discovery of valuable reserves or resources. There is no assurance that reported resources can be converted into reserves. Furthermore, actual results upon production may differ from those anticipated at the time of discovery. To access additional reserves in explored areas, we will need to successfully complete development projects, including but not limited to extending existing mines and developing new mines. There are a number of uncertainties inherent in the development and construction of any new mine or an extension of an existing mine, including but not limited to (i) the availability and timing of necessary governmental approvals; (ii) the timing and cost necessary to construct mining and processing facilities; (iii) the availability and cost of labor, utilities, auxiliary materials and other supplies and the accessibility of transportation and other infrastructure; and (iv) the availability of funds to finance construction and production activities. There is no assurance that any future exploration activities or development projects will extend the life of our existing mining operations or result in any new economic mining operations and such failure may have a material adverse effect on our business, financial condition and results of operations.

Our indebtedness could adversely affect our business, financial condition and results of operations.

We have relied, and expect to continue to rely, on both short-term and long-term borrowings to fund a significant portion of our capital requirements. As of December 31, 2019, we had approximately RMB42,286.7 million in outstanding short-term bonds and short-term bank borrowings (including the current portion of long-term bank and other borrowings) and RMB59,243.6 million in outstanding long and medium-term bonds and long-term bank and other borrowings (excluding the current portion of these borrowings). On March 26, 2020, subject to approval at our 2019 annual general meeting that is expected to be held in 2020, our Board approved to authorize (i) the issuance of debt financing instruments and bonds in the PRC with an aggregate outstanding balance of all bonds not exceeding RMB50 billion (including various issued domestic bonds), and (ii) the issuance of overseas bonds with an aggregate amount of not more than US1 billion (or in other currencies with the equivalent amount), the term of which authorizations will commence on the date of approval at our 2019 annual general meeting and close upon the conclusion of our 2020 annual general meeting. Although we have been managing our debt and assets with the goal of maintaining our debt at an appropriate level, there is no assurance that such efforts would be successful or the level of our debt will be further decreased. Please see Note 18 and Note 43 to our audited consolidated financial statements for more detailed information about our borrowings and recent issuance of bonds and notes in 2020. This level of debt could have significant consequences on our operations, including:

- making it more difficult for us to fulfill payment and other obligations under our outstanding debt, including repayment of our debt and credit facilities should we be unable to obtain extensions for any such debt or credit facilities before they mature. Please see “Item 5 - Operating and Financial Review and Prospects - B. Liquidity and Capital Resources” for maturities of our outstanding long-term borrowings;
- reducing the availability of cash flows to fund working capital, capital expenditures, acquisitions and other general corporate purposes;
- exposing us to interest rates fluctuations on our borrowings and the risk of being unable to rollover, extend or refinance our borrowings as necessary;
- potentially increasing the cost of additional financing and making it more difficult for us to conduct equity financings in the capital markets or obtain government approvals to seek additional financing; and
- putting pressure on our ADS price due to concerns of our ability to repay our debt.

Our ability to meet our payment and other obligations under our outstanding debt depends on our ability to generate cash flows in the future or to refinance such debt. In 2019, we carried out capital preservation and appreciation businesses by using daily reserve fund for investments such as structural deposits and monetary funds. However, we cannot assure you that such capital preservation and appreciation businesses will be successful or profitable, or our business in general will generate sufficient cash flows from operations, to satisfy our obligations under our outstanding debt and to fund other liquidity needs. If we are not able to generate sufficient cash flows to meet such obligations, we may need to refinance or restructure our debt, reduce or delay capital investments, or seek additional equity or debt financing. The sale of additional equity securities could result in dilution to our ADS holders. A shortage of financing could in turn impose limitations on our ability to plan for, or react effectively to, changing market conditions or to expand through organic and acquisitive growth, thereby reducing our competitiveness. We cannot assure you that future financing will be available in amounts or on terms acceptable to us, if at all.

The instruments governing our senior debt contain a number of significant financial and other covenants that restrict our ability to raise further debt, take certain corporate actions and pay dividends.

We issued US\$500 million senior perpetual securities at a rate of 4.25% (the “Securities”) in October 2016, through Chalco Hong Kong Investment Company Limited (the “Bond Issuer”) with guarantees to the repayment obligations of the Securities provided by Chalco Hong Kong (the “Subsidiary Guarantor”). Please refer to “Item 4. Information on the Company - A. History and Development of the Company - Senior Perpetual Capital Securities Offering” for further details.

The indentures governing the Securities contain a number of significant financial and other covenants. Such covenants restrict, subject to certain exceptions, among other things, our and our subsidiaries’ ability to create, or have outstanding, any security interest upon our or our subsidiaries’ present or future undertaking, assets or revenues to secure any indebtedness which is in the form of bonds, notes, debentures, loan stock or other securities which for the time being are, or are intended to be or capable of being, quoted, listed or dealt in or traded on any stock exchange or over-the-counter or other securities market (“Relevant Indebtedness”) which is issued outside the PRC, our ability to create or have any Relevant Indebtedness which is issued outside the PRC, our ability to create or have outstanding any guarantee or indemnity in respect of any Relevant Indebtedness which is issued outside the PRC and the Bond Issuer’s, Subsidiary Guarantor’s and their respective subsidiaries’ ability to create, or have outstanding, any security interest upon their present or future undertaking, assets or revenues to secure any Relevant Indebtedness or any guarantee or indemnity in respect of any Relevant Indebtedness or to sell or otherwise dispose of capital stock held or controlled by it in any direct or indirect subsidiary of Chalco Hong Kong which is not a Subsidiary Guarantor. These covenants restrict our ability to raise additional funds in the future through issuing Relevant Indebtedness which is issued outside the PRC or creating or having any guarantee or indemnity in respect of any Relevant Indebtedness which is issued outside the PRC and may restrict our ability to engage in some transactions that we expect to be of benefit to us.

The Securities are guaranteed by Chalco Hong Kong. A breach of any of the covenants in the indenture governing the Securities could result in redemption of the Securities at our discretion or an increase of coupon rate if we do not redeem the Securities upon a breach of such covenants. If we default under the Securities in the future, the holders may enforce their claims against the guarantors to satisfy our obligations to them. In addition, such default may result in a default and acceleration of our senior debt and the holders of our senior debt could gain ownership of the capital stock of certain of our wholly-owned subsidiaries (if such capital stock is pledged for such senior debt) and/or enforce their claims against the assets of the guarantors (if guarantee is provided for such senior debt). Consequently, we could lose control or ownership of certain of our assets and operations of the Subsidiary Guarantor or pledgers.

In addition to the Securities, in October 2015, October 2018 and November 2019, we issued RMB2,000 million in aggregate principal amount of 5.50% perpetual medium-term notes (the “2015 Perpetual Medium-term Notes”), RMB2,000 million in aggregate principal amount of 5.10% perpetual medium-term notes (the “2018 Perpetual Medium-term Notes”) and RMB1,500 million perpetual medium-term notes with an initial distribution rate at 4.20% (the “2019 Perpetual Medium-term Notes”), respectively, in China. Pursuant to the terms of the 2015 Perpetual Medium-term Notes, the 2018 Perpetual Medium-term Notes and the 2019 Perpetual Medium-term Notes, while any coupon distribution payments are unpaid or deferred, our headquarters cannot declare or pay dividends to shareholders or decrease the share capital, or make material fixed asset investments of our headquarters. Therefore, our ability to pay dividends in respect of our ordinary shares and the ADSs may be limited under certain circumstances.

In addition, if these perpetual securities are categorized as debt due to changes of accounting standard or other reasons, or if we choose to redeem these perpetual securities, our total equity may be reduced, which may be adverse to our financial condition or the price of our ordinary shares or ADSs.

The interests of our controlling shareholder who exerts significant influence over us may conflict with ours.

As of December 31, 2019, our largest shareholder, Chinalco, directly owned 29.67% of our issued share capital and indirectly owned an additional 2.39% of our issued share capital through its controlled entities. The interests of Chinalco may conflict or even compete with our interests and those of our public shareholders. Chinalco may take actions that are in the interest of its subsidiaries, associates and other related entities to our detriment. For example, Chinalco may seek to influence our decision as to the amount of dividends we declare and distribute. Any increase in our dividend payout would reduce funds otherwise available for reinvestment in our businesses and thus may adversely affect our future prospects and financial condition.

In addition, we enter into transactions with related parties, including Chinalco and its subsidiaries and associates, which provide a range of services to us, including engineering and construction services, social services, land and property leasing as well as the supply of raw and supplemental materials. See “Item 7. Major Shareholders and Related Party Transactions - B. Related Party Transactions” for detailed information. It would be difficult to find an alternative source for some services that we receive from Chinalco. Our cost of operations may increase if Chinalco, its subsidiaries and associates are unable to continue providing such services to us.

In January 2019, Yunnan SASAC transferred its 51% equity interest in Yunnan Metallurgical Group Co., Ltd. to China Copper, a wholly-owned subsidiary of Chinalco, with no consideration. As Yunnan Aluminum, an affiliated company of Yunnan Metallurgical Group Co., Ltd., competes with us in the business segments of alumina and primary aluminum, Chinalco, as the indirect controlling shareholder of Yunnan Aluminum and our direct controlling shareholder, issued a letter of undertakings on non-competition to us, according to which Chinalco undertook to start in 2019 planning the integration of the businesses in which Yunnan Aluminum and we compete with each other, and address such business competition within five years. For further details, please see “Item 4. Information on the Company - A. History and Development of the Company.” While we intend to closely monitor Chinalco’s planning and implementation of such business integration and make timely public disclosure about significant progress made, due to the uncertainties involved in such business integration, however, we cannot assure you that business competition between Yunnan Aluminum and us would be addressed without undue delays or at all, or the plan of such business integration or the implementation thereof would be viewed by you or other investors as most favorable to us or our shareholders.

We are subject to, and incur costs to comply with, environmental laws and regulations.

As we produce air emissions, discharge waste water, and handle hazardous substances at our bauxite mines, alumina refineries and primary aluminum smelters, we are subject to, and incur costs to comply with, environmental laws and regulations.

Given the magnitude, complexity and continuous amendments to these laws and regulations, compliance therewith may be onerous or may involve substantial financial and other resources to establish efficient compliance and monitoring systems. The liabilities, costs, obligations and requirements associated with these laws and regulations may therefore be substantial and may delay the commencement of, or cause interruptions to, our operations. Non-compliance with the relevant laws and regulations applicable to our operations may even result in substantial penalties or fines, suspension or revocation of our relevant licenses or permits, termination of government contracts or suspension of our operations. For example, in 2019, the local environmental protection authorities imposed administrative penalties on some of our subsidiaries, including Chalco Mining, Shanxi New Material and Xinhua Technology, for emission of sulfur dioxide and nitrogen oxides occasionally exceeding regulatory standards from thermal power plants and primary aluminum smelters. We have strengthened the rectification of issues in relation to environmental protection and launched the environmental governance projects in 2019, reforming our system for ultra-low emission. However, as the environmental protection standards and requirements may be further enhanced, we cannot assure you that the similar events would not occur in the future, if such incidents were to occur, it could impact our operating results, financial condition and reputation, all of which could adversely affect our profitability and ability to retain existing customers and to attract new customers.

In addition, the environmental laws and regulations in the PRC and other jurisdictions in which we operate continue to evolve. As a result, we may incur significant additional costs if relevant laws and regulations change or enforcement of existing laws and regulations becomes more rigorous. For instance, to comply with the requirement of desulphurization and denitration in China, we were requested to invest in upgrading or remolding certain production facilities. Due to serious haze hovering in certain areas in China, the PRC government has issued and may continue to issue rules and regulations to restrict production of certain industries in certain areas to alleviate air pollution, pursuant to which we may reduce output of our relevant plants from time to time. Further, our overseas expansion projects are subject to foreign environmental laws and regulations. Failure to comply with environmental laws and regulations may trigger a variety of administrative, civil and criminal enforcement measures, including the assessment of monetary penalties, the imposition of remedial requirements and the issuance of orders enjoining future operations, all of which may materially and adversely affect our business operations.

We are subject to administrative policies and orders relating to China's Energy-Saving and Emission Reduction Goals that could adversely affect our production.

We are subject to administrative energy-saving and emission reduction policies and orders carried out by the central and provincial governments in accordance with China's Energy-Saving and Emission Reduction Goals. The MIIT issued the Standard Conditions for Aluminum Industry on July 18, 2013 and updated it on March 3, 2020, which set forth various standards for existing enterprises, including but not limited to standards for environmental protection, energy consumption, and utilization of resources. Although we have been in compliance with the applicable Standard Conditions for Aluminum Industry since its issuance, we cannot assure you that the relevant government authorities will not issue more stringent standards or rules, which may require us to incur additional costs or expenses to comply with these standards or rules, and our existing production may be delayed for facility upgrading or suspended before full compliance with these standards or rules. The occurrence of any of the foregoing could have an adverse effect on our business, results of operations and financial condition.

We are subject to accidents and natural disasters that may adversely affect our performance.

We may experience accidents and natural disasters in the course of our operations, which may cause significant property damage and personal injuries. Significant accidents and natural disasters may cause interruptions to our operations or result in property or environmental damage, increase in operating expenses or loss of revenues. The occurrence of accidents, natural disasters and the resulting consequences may not be covered adequately, or at all, by the insurance policies we carry. Losses or payments incurred by us as a result of major accidents or natural disasters may have a material adverse effect on our results of operations.

We have not obtained valid titles or land use rights to certain properties or land parcels that we occupy.

We have not obtained valid ownership certificates to certain properties that we occupy. These properties are used primarily for production plants and daily operations management. As of December 31, 2019, the book value of our properties with defective titles is RMB7,315 million, which represents approximately 3.6% of our total asset value. In addition, we had not obtained land use rights to certain land parcels, which we use primarily for our production plants. As of December 31, 2019, the book value of these land parcels is RMB74 million, representing approximately 0.04% of our total asset value. We have applied to the appropriate authorities to obtain the relevant ownership certificates. We cannot give any assurance that ownership dispute will not occur or that third parties will not assert any claims against us for compensation in respect of any use of these properties or land parcels.

Our business involves inherent risks and occupational hazards, which could damage our reputation, subject us to liability claims and cause substantial costs to us.

Our business involves inherent risks and occupational hazards. Under our mining operations, we engage or may engage in certain inherently risky and hazardous activities, including, among others, operations at height or on dangerous terrains, underground excavation and construction, use of heavy machinery, mining and handling of flammable and explosive materials, and we are therefore subject to risks associated with these activities, including, among others, geological catastrophes, toxic gas and liquid leakages, equipment failures, industrial accidents, fire, explosions and underground water leakages. Although we conduct geological assessments on mining conditions and adapt our mining plans to the mining conditions at each mine, we cannot assure you that adverse mining conditions will not endanger our workforce, increase our production costs, reduce our bauxite or coal output or temporarily suspend our operations. The occurrence of any of the foregoing events or conditions could have a material adverse impact on our business and results of operations. Additionally, we are exposed to operational risks associated with industrial or engineering activities, such as maintenance problems or equipment failures. These risks and hazards may result in personal injury and fatal casualties, damage to or destruction of properties or production facilities, and pollution and other environmental damage. Any of these consequences, to the extent they are significant, could result in business interruption, possible legal liability and damage to our business reputation and corporate image.

Our mines and operating facilities may be damaged by water, gas, fire or cave-ins due to unstable geological structures. Any significant accident, business disruption or safety incident could result in substantial uninsured costs and the diversion of our resources, which could materially and adversely affect our business operations and financial condition.

We may be subject to product liability claims.

Some of the products we sell or manufacture may expose us to product liability claims relating to property damage or personal injury. The successful assertion of product liability claims against us could result in significant damage payments and harm to our reputation, which in turn could have a material adverse effect on our business, financial condition and results of operations.

We are subject to litigation risks.

In the ordinary course of business, claims involving project owners, customers, suppliers and subcontractors may be brought against us and by us in connection with our operations. If we were found to be liable on any of the claims, we would have to incur a charge against earnings to the extent a reserve had not been established for the matter in our accounts, or to the extent the claims were not sufficiently covered by our insurance coverage. Both claims brought against us and by us, if not resolved through negotiations, are often subject to lengthy and expensive litigation or arbitration proceedings, and claims against us may also result in freeze of or restrictions on our bank deposits or other assets during such lengthy legal proceedings. Charges associated with claims brought against us and write-downs associated with claims brought by us could have a material adverse impact on our business, financial condition, results of operations and cash flow. Moreover, legal proceedings resulting in judgments or findings against us may harm our reputation and damage our prospects for future contract or business awards.

We face counterparty risks.

While we generally sell goods and provide services to reputable customers and evaluate the customers' credit in accordance with our internal risk management criteria, such as their credit history and likelihood of default, we have limited access to information about our customers and we may encounter difficulties in the collection of receivables in certain countries that we have less experience in our dealings. Therefore, we cannot guarantee that all of our customers will fully perform their obligations under their respective contracts with us, and the deterioration of any customers' credit or payment conditions may result in those customers defaulting on their contractual obligations, which could materially and adversely affect our business, financial condition and results of operations. Please refer to "- Our business may be materially and adversely affected by the recent outbreak of COVID-19" for further details of the impact of outbreak of COVID-19 on our customers. In addition, disputes with governmental entities and other public organizations could potentially lead to contract termination if these remain unresolved or may take a considerably longer period of time to resolve the disputes with counterparties in the private sector, and payments from these entities and organizations may be delayed as a result.

We may face challenges to our intellectual property rights which could adversely affect our reputation, business and financial position.

We own important intellectual property, including patents and trademarks. Our intellectual property plays an important role in maintaining our competitive position in a number of the markets that we serve. Our competitors may develop technologies that are similar or superior to our proprietary technologies or design around the patents we own or license. Developments or assertions by or against us relating to intellectual property rights, and any inability to protect or enforce these rights, could adversely affect our business and competitive position.

We may be exposed to claims in relation to the unsatisfactory performance of third-party service providers, and disputes with business partners may also adversely affect our business.

We rely on third-party service providers for certain services, including but not limited to mining infrastructure construction, logistics services or warehouse management. Therefore, we are exposed to the risk that our third-party service providers may fail to perform their obligations, which may adversely affect our business operations. In addition, from time to time, we co-operate with business partners to develop our business, including acquiring strategic mining resources or businesses that complement our own business line. Furthermore, we operate certain projects through joint venture arrangements and may enter into further joint ventures in the future along with the expansion of our operations. We may have disputes with these business partners or joint venture partners over various aspects, such as performance of each party's obligations, scope of each party's responsibilities, product quality and logistics services. If such disputes cannot be settled in a timely manner, our financial condition and business may be adversely affected.

Failure to hire and retain management executives and other qualified personnel could adversely affect our business and prospects.

The growth of our business operations depends on the continued services of our senior management team. The industry experience, expertise and contributions of our executives and other members of our senior management are essential to our continued success. We will require an increasing number of experienced and competent executives in the future to implement our growth plans. If we were to lose the services of any of our key management members and were unable to recruit and retain personnel with equivalent qualifications at any time, the management and growth of our business could be adversely affected.

Competition for qualified personnel in general is intense in the PRC and other markets where we operate. We cannot guarantee that we will be able to maintain an adequately skilled labor force necessary for us to execute our projects or to perform other corporate activities, nor can we guarantee that staff costs will not increase as a result of a shortage in the supply of skilled personnel. If we fail to attract and retain personnel with suitable managerial, technical or marketing expertise or maintain an adequate labor force on a continuous basis, our business operations could be adversely affected and our future growth and expansions may be inhibited. Please refer to “- Our business may be materially and adversely affected by the recent outbreak of COVID-19” for further details of the impact of outbreak of COVID-19 on our labor force.

We may not be able to detect and prevent fraud or other misconduct committed by our employees, representatives, agents, customers, affiliates or other third parties.

We may be exposed to fraud or other misconduct committed by our employees, representatives, agents, customers, affiliates or other third parties that could subject us to litigation, financial losses and sanctions imposed by governmental authorities, as well as adversely affect our reputation, business, financial condition, results of operations and ADS trading prices. Such misconduct may include, among others:

- hiding unauthorized or unsuccessful activities, resulting in unknown and unmanaged risks or losses;

- intentionally concealing material facts, or failing to adequately perform necessary due diligence or risk analysis procedures designed to identify potential risks;
- improperly using or disclosing confidential information;
- engaging in improper activities or activities that might be subject to penalties, fines or sanctions;
- misappropriation of funds;
- conducting transactions that exceed authorized limits;
- engaging in misrepresentation or fraudulent, deceptive or otherwise improper or illegal activities;
- engaging in unauthorized or excessive transactions to the detriment of our customers; or
- otherwise not complying with applicable laws or our internal policies and procedures.

Our internal control procedures are designed to monitor our operations and ensure overall compliance. However, such internal control procedures may be unable to identify, detect or prevent all incidents of non-compliance or suspicious transactions in a timely manner, if at all. In addition, we do not have control over the activities conducted on their own by those of our customers, affiliates or other third parties.

There is no assurance that fraud or other misconduct by our employees, representatives, agents, customers, affiliates or other third parties will not occur in the future. If such fraud or other misconduct does occur and to the extent that our employees, representatives, agents, customers, affiliates or other third parties are penalized for any of their non-compliance activities or are otherwise subject to any sanctions laws of foreign jurisdictions, it may cause negative publicity of us as a result, and could have a material adverse effect on our business, financial condition, results of operations and our ADS trading prices.

Cyber attacks and security breaches may threaten the integrity of our intellectual property and other sensitive information and disrupt our business operations, which could adversely affect our reputation, business and financial position.

We face global cybersecurity threats, which may range from uncoordinated individual attempts to sophisticated and targeted measures directed at us. Cyber attacks and security breaches may include, but are not limited to, attempts to access information, computer viruses, denial of service and other electronic security breaches. Cyber attacks and security breaches may cause equipment failures, loss of information and limited access to systems. For manufacturing companies, cyber attacks and security breaches may result in the theft of sensitive data, including valuable technical and marketing information, disruptions to operations and breakdown of industrial control system. The economic costs to us to eliminate or alleviate cyber attacks and security breaches could be significant and may be difficult to estimate or calculate because the loss may differ based on the identity and motive of the programmer or hacker, which are often difficult to identify. Further, the perpetrators of cyber attacks and security breaches are not restricted to specific groups or persons. These attacks may be committed by company employees or external actors operating in any geography, including jurisdictions where law enforcement measures to address such attacks are unavailable or ineffective, and may even be launched by or at the behest of nation states. In addition, new and amended PRC regulatory requirements regarding network security and information protection have been adopted in recent years to further strengthen the regulation in those areas, which may require us to devote significant resources to establishing and maintaining our compliance with such new or amended legislation or regulations.

Although we have not experienced any material cybersecurity incidents in the past, we cannot assure you that we will not experience them in the future. Due to the evolving nature of cybersecurity threats, the scope and impact of any future incident cannot be predicted. While we devote significant resources to security measures to safeguard our systems and mitigate potential risks, such as deploying network protection devices and performing regular security assessment, there is no assurance that such actions will be sufficient to prevent cyber attacks or security breaches that manipulate or improperly use our systems or networks, compromise confidential or otherwise protected information, destroy or corrupt data, or otherwise disrupt our operations. The occurrence of such events could negatively impact our reputation and our competitive position and could result in litigation with third parties, regulatory action, loss of business, potential liability and increased remediation costs, any of which could have an adverse effect on our financial condition and results of operations.

We are subject to risks normally associated with cross-border transactions, and our export products may become subject to anti-dumping or countervailing duty proceedings.

During the past few years, we generated marginal revenue from exports of certain chemical alumina products and also from time to time from exports of certain non-ferrous metals and minerals products to foreign jurisdictions. In 2019, we only engaged in the export of certain chemical alumina products to foreign countries including, among others, South Korea, Japan and countries in Southeast Asia, and revenue generated from such export accounted for approximately 0.55% of our total revenues in 2019. Such foreign jurisdictions and other countries may take restrictive measures, including, among others, imposition of tariffs, anti-dumping duties and other non-tariff barriers, to protect their own markets. The sales of our product in overseas markets may be adversely affected by increases in or new impositions of anti-dumping duties, countervailing duties, quotas or tariffs imposed on our exports. Further increases in or new imposition of anti-dumping duties, countervailing duties, quotas or tariffs on our sales in these markets could adversely affect the exports to these regions in the future. For example, since 2018, the U.S. government has imposed tariffs and other trade barriers on products imported from China, which elicited retaliatory tariff increases by the PRC government on the U.S. products. Since October 1, 2018, the U.S. government had imposed a 10% tariff on various aluminum products imported from China, including chemical alumina products. Starting from May 2019, this tariff rate was increased to 25%. In 2019, we exported 22,662 tonnes of chemical alumina products to the United States, which decreased by more than 10% compared to 2018 due to the tariff increase. The revenue from our export to the United States represented less than 0.1% of our total revenues in both 2018 and 2019. Other than exports of chemical alumina products, we did not have any exports to the United States in 2019. There is no assurance that such export volume of chemical alumina products will not further decrease in the future. In addition, such trade frictions and tariffs involved, as well as the sluggish global economy in 2019 and early 2020 in general, may decrease China's aluminum export to the United States and other countries and reduce global aluminum consumption, which could in turn have a material adverse effect on the demand of our products as well as our business, financial condition and results of operations. On January 15, 2020, the PRC government and the U.S. government entered into the U.S.-China Phase One trade deal agreement. However, it is not yet clear what further actions the U.S. government and the PRC government may take. There is no assurance that a broader trade agreement would be successfully negotiated between the U.S. and China, or no additional tariffs or other trade barriers would be imposed. If there is any escalation in trade frictions, we cannot assure you whether such development would not have a material adverse effect on the business environment in general, global economic conditions and the stability of global financial markets. Any of these factors affected by the developments in trade barriers could in turn have a material adverse effect on our business, financial condition and results of operations.

By virtue of our transactions with parties outside the PRC, we will be subject to the risks normally associated with cross-border business transactions and activities. We will also be exposed to the risk of changes in social, legal, political and economic conditions in the foreign jurisdictions. In particular, unexpected changes in regulatory requirements, tariffs and other trade barriers and price or exchange controls could limit our operations and make the repatriation of profits difficult.

Our operations are affected by a number of risks relating to conducting business in the PRC.

As most of our assets and operations are located in the PRC, we are subject to a number of risks relating to conducting business in the PRC, including the following:

- The central and local PRC government continues to exercise a substantial degree of control and influence over the aluminum industry in China and shape the structure and development of the industry through the imposition of industry policies governing major project approvals and safety, environmental and quality regulations. If the PRC government changes its current policies or the interpretation of those policies that are currently beneficial to us, we may face pressure on profit margins and significant constraints on our ability to expand our business operations.

- Although the PRC has been one of the world's fastest growing economies in terms of GDP growth in the past 30 years, the global financial crisis that unfolded in 2008, coupled with the on-going structural adjustment of the PRC economy in the past few years, has led to a marked slowdown in the economic growth of the PRC. For example, the GDP growth rate of the PRC decreased from 11.4% in 2007 to 6.1% in 2019. There is no assurance that the GDP growth rate of the PRC will be maintained at the current level. In addition, the outbreak and global spread of the COVID-19 in 2020 may adversely affect global and China's economy and financial market in general. Please refer to "Our business may be materially and adversely affected by the recent outbreak of COVID-19" for further details of the impact of the outbreak of COVID-19. A slowdown or decline in the PRC economy could reduce business activities and demand for our products. In addition, the PRC government exercises control over China's economic growth through the allocation of resources, control of payments of obligations denominated in foreign currencies and monetary and tax policies. Some of these measures benefit the overall economy of China, but may have a materially adverse impact on us.
- We are subject to reviews and inspections by various governmental authorities and regulatory agencies. These reviews and inspections could cover a broad range of aspects in relation to our business and operations, including financial reporting, tax reporting, internal control and compliance with applicable laws, rules and regulations. We cannot predict the impact of any findings of these reviews and inspections to be carried out by governmental authorities and regulatory agencies in the future, and we cannot assure you that the outcome of any such reviews and inspections would not have a material adverse effect on our business, financial condition, results of operations and prospects.
- In 2005, China adopted a managed floating exchange rate system to allow the value of the Renminbi to fluctuate within a regulated band based on supply and demand with reference to a basket of currencies. Since then the exchange rate between the U.S. dollar and Renminbi has fluctuated and become increasingly unpredictable following the global financial crisis. In April 2012, the PRC government took a milestone step in turning the Renminbi into a global currency by doubling the size of its trading band against the U.S. dollar to 1%, pushing through a crucial reform that further liberalizes its financial markets. The PBOC further allows the Renminbi trading band against the U.S. dollar to rise or fall 2% from a mid-point every day, effective on March 17, 2014, compared with its previous 1% limit. In August 2015, the PBOC announced that the daily central parity quotes the market-makers reported to the China Foreign Exchange Trade System operated by the PBOC before the market opens should be based on the closing rate of the inter-bank foreign exchange rate market on the previous day, supply and demand in the market, and price movement of major currencies, effective on August 11, 2015. In recent years, the Renminbi has fluctuated against the U.S. dollar, at times significantly. It is difficult to predict how market forces or PRC or U.S. government policy may impact the exchange rate between the Renminbi and the U.S. dollar in the future. Any appreciation or depreciation of the Renminbi will affect the value of our U.S. dollar-denominated borrowings and overseas investments, the prices of our export sales denominated in foreign currencies and the Renminbi equivalent value of our trade and notes receivable denominated in foreign currencies, which may affect our financial condition and results of operations. Our financial condition and operating performance may also be affected by changes in the value of currencies other than Renminbi in which our earnings and obligations are denominated.
- There might be uncertainties regarding the interpretation and enforcement of PRC laws, rules and regulations. The Chinese legal system is a civil law system based on written statutes. Unlike common law systems, it is a system in which decided legal cases may be cited for reference but have limited precedential value. Over the past decades, the PRC government has promulgated a comprehensive system of laws, rules and regulations governing economic matters. However, because these laws, rules and regulations are relatively new, and because of the relatively limited volume of published cases and their non-binding nature, and because the laws, rules and regulations often give the relevant administrative and court authorities certain discretion in how to interpret and enforce them, uncertainties regarding the interpretation and enforcement of these laws, rules and regulations may adversely affect our operations.

You may experience difficulties in effecting service of legal process and enforcing judgments against us and our management, and the ability of U.S. authorities to bring actions in the PRC may also be limited.

Most of our assets and our subsidiaries are located in the PRC. In addition, most of our directors and officers reside within the PRC, and most of the assets of our directors and officers are located within the PRC. As a result, it may not be possible to effect service of process within the United States or elsewhere outside the PRC upon most of our directors or officers, including with respect to matters arising under applicable laws and regulations. Moreover, the PRC does not have treaties providing for the reciprocal recognition and enforcement of judgments of courts with the United States, the United Kingdom or most other Western countries, and Hong Kong has no arrangement for the reciprocal enforcement of judgments with the United States.

As a result, recognition and enforcement in the PRC or Hong Kong of judgments of a court in the United States and any of the other jurisdictions mentioned above in relation to any matter not subject to a binding arbitration provision may be difficult or impossible. Even if you sue successfully in a U.S. court or any of the other jurisdictions mentioned above, you may not be able to collect on such judgment against us or our directors and officers. In addition, the SEC, the U.S. Department of Justice and other U.S. authorities may also have difficulties in bringing and enforcing actions against us or our directors or officers in the PRC. Furthermore, class action lawsuits, which are available in the United States for investors to seek remedies, are generally uncommon in the PRC.

The audit reports included in this annual report are prepared by auditors who are not inspected fully by the Public Company Accounting Oversight Board and, as such, you are deprived of the benefits of such inspection.

Auditors of companies that are registered with the SEC and traded publicly in the United States, including our independent registered public accounting firms, must be registered with the U.S. Public Company Accounting Oversight Board (United States) (the “PCAOB”) and are required by the laws of the United States to undergo regular inspections by the PCAOB to assess their compliance with the laws of the United States and professional standards. Because we have substantial operations within the PRC and the PCAOB is currently unable to conduct full inspections of the work of our auditors as they relate to those operations without the approval of the Chinese authorities, our auditors’ work related to our operations in China is not currently inspected by the PCAOB.

This lack of PCAOB inspections of audit work performed in China prevents the PCAOB from regularly evaluating audit work of any auditor that was performed in China including that performed by our auditors. As a result, investors may be deprived of the full benefits of PCAOB inspections.

On December 7, 2018, the SEC and the PCAOB issued a joint statement highlighting continued challenges faced by the U.S. regulators in their oversight of financial statement audits of U.S.-listed companies with significant operations in China. On November 4, 2019, the SEC announced that SEC and PCAOB had dialogue with the “Big Four” accounting firms, which emphasized the need for effective and consistent global firm oversight of member firms, including those operating in China. On February 19, 2020, the SEC and the PCAOB further issued a joint statement on continued dialogue with “Big Four” accounting firms on audit quality in China, highlighting that PCAOB continues to be prevented from inspecting the audit work and practices of PCAOB-registered audit firms in China on a comparable basis to other non-U.S. jurisdictions. However, it remains unclear what further actions the SEC and PCAOB will take to address the problem.

The inability of the PCAOB to conduct inspections of audit work performed in China makes it more difficult to evaluate the effectiveness of our auditors’ audit procedures as compared to auditors in other jurisdictions that are subject to PCAOB inspections on all of their work. Investors may lose confidence in our reported financial information and procedures and the quality of our financial statements. As part of a continued regulatory focus in the United States on access to audit and other information currently protected by national laws, in particular PRC laws, in June 2019, a bipartisan group of lawmakers introduced the Ensuring Quality Information and Transparency for Abroad-Based Listings on our Exchanges Act, or the EQUITABLE Act, in both houses of the U.S. Congress to require the SEC to maintain a list of issuers for which the PCAOB is not able to inspect or investigate an auditor report issued by a foreign public accounting firm. The EQUITABLE Act prescribes increased disclosure requirements for these issuers and, beginning in 2025, the delisting from U.S. national securities exchanges (including the New York Stock Exchange) of issuers included on the SEC’s list for three consecutive years. It is unclear if and when this proposed legislation would be enacted. Enactment of this legislation or other efforts to increase U.S. regulatory access to audit information could cause investor uncertainty for affected issuers, including us, and the market price of our ADSs could be adversely affected.

Proceedings instituted recently by the SEC against five PRC-based accounting firms could result in our financial statements being determined to not be in compliance with the requirements of the Exchange Act.

In December 2012, the SEC brought administrative proceedings against five accounting firms in China, alleging that they had refused to produce audit work papers and other documents related to certain other China-based companies under investigation by the SEC for potential accounting fraud. On January 22, 2014, an initial administrative law decision was issued, censuring these accounting firms and suspending four of the five firms from practicing before the SEC for a period of six months. The four firms appealed to the SEC against this decision and, on February 6, 2015, each of the four accounting firms agreed to a censure and to pay a fine to the SEC to settle the dispute and avoid suspension of their ability to practice before the SEC. The firms’ ability to continue to serve all their respective clients is not affected by the settlement. The settlement requires the firms to follow detailed procedures to seek to provide the SEC with access to Chinese firms’ audit documents via the CSRC. If the firms do not follow these procedures, the SEC could impose penalties such as suspensions, or it could restart the administrative proceedings. The settlement did not require the firms to admit to any violation of law and preserves the firms’ legal defenses in the event the administrative proceeding is restarted.

We were not and are not subject to any SEC investigations, nor are we involved in the proceedings brought by the SEC against the accounting firms. However, the independent registered public accounting firms that issue the audit reports included in our annual reports filed with the SEC is affiliated to one of the four accounting firms above.

In the event that the SEC restarts the administrative proceedings, depending upon the final outcome, listed companies in the United States with major PRC operations may find it difficult or impossible to retain auditors in respect of their operations in the PRC, which could result in financial statements being determined to not be in compliance with the requirements of the Exchange Act, including possible delisting. Moreover, any negative news about the proceedings against these audit firms may cause investor uncertainty regarding China-based, United States-listed companies and the market price of our ADSs may be adversely affected.

If our independent registered public accounting firms were denied, temporarily, the ability to practice before the SEC and we were unable to timely find another registered public accounting firm to audit and issue an opinion on our financial statements, our financial statements could be determined to not be in compliance with the requirements of the Exchange Act. Such a determination could ultimately lead to the delisting from the NYSE or deregistration from the SEC, or both, which would substantially reduce or effectively terminate the trading of our ADSs in the United States.

Item 4. Information on the Company

A. History and Development of the Company

We were incorporated as a joint stock limited company under the Company Law of the PRC on September 10, 2001 under the corporate name Aluminum Corporation of China Limited. Our principal executive and registered office is located in the People's Republic of China at No. 62 North Xizhimen Street, Haidian District, Beijing, China 100082, and our telephone number is (86) 10 8229 8322. Our website address is www.chalco.com.cn. The information on our website does not constitute a part of this annual report. Our U.S. public filings are available at the website maintained by the SEC at www.sec.gov, which contains reports, proxies and information statements, and other information regarding issuers that file electronically with the SEC.

Pursuant to a reorganization agreement entered into among Chinalco, Guangxi Investment and Guizhou Development in 2001, substantially all of Chinalco's alumina and primary aluminum production operations, as well as a research institute and other related assets and liabilities, were transferred to us upon our formation. We acquired our bauxite mining operations and associated mining rights from Chinalco in a separate mining rights agreement.

Our A Shares have been listed on the Shanghai Stock Exchange since April 2007. Our H Shares and our ADSs, each representing 25 H Shares, have been listed on the Hong Kong Stock Exchange and New York Stock Exchange, respectively, since December 2001.

We are a vertically integrated aluminum producer with operations in bauxite and coal mining, alumina refining and primary aluminum smelting. We also produce ancillary products and services derived from or related to our aluminum operations. In addition, we are engaged in trading and logistics of alumina, primary aluminum, other non-ferrous metal products, coal products and raw and ancillary materials in bulk domestically and internationally. Since 2013, we have expanded our operations into power generation. See “— B. Business Overview” for more details.

We have substantially increased the size and scope of our operations through organic growth as well as selective acquisitions and joint ventures. Our key operating assets currently include six subsidiaries mainly engaged in bauxite mining; two integrated alumina and primary aluminum production plant; eight stand-alone alumina refineries; nine stand-alone primary aluminum smelters; one stand-alone secondary aluminum producer; four stand-alone carbon production plants; one integrated power generation company with coal mining operations and one institute providing research and development services. All of our principal alumina and primary aluminum production facilities are operated in accordance with ISO14001 standards.

Private Placement of A Shares

On March 8, 2012, our Board resolved to issue up to 1.25 billion A Shares in the PRC. The A Share issue plans previously proposed by our Board on June 30, 2009 and January 30, 2011 and approved by our shareholders at the extraordinary general meeting, A Share class meeting and H Share class meeting held on August 24, 2009 and on April 14, 2011, respectively, ceased. Pursuant to the new issue plan approved by our Board on March 8, 2012, we planned to issue up to 1.25 billion A Shares, with a nominal value of RMB1.00 each, by way of private placement for expected proceeds not exceeding RMB8 billion. We intended to issue the A Shares to no more than ten specific target subscribers within six months of obtaining the approval of the CSRC. The issue price of A Shares to be offered shall be not less than 90% of the average trading price of our A Shares in twenty trading days immediately preceding the pricing determination date. We intended to apply proceeds from this private placement to finance Chalco Xing County Alumina Project, Zhongzhou branch Ore-dressing Bayer Process expansion construction project and to supplement working capital. The issue plan was approved by the SASAC on April 5, 2012 and by our shareholders at the extraordinary general meeting, A Share class meeting and H Share class meeting held on May 4, 2012. On August 24, 2012, our Board resolved to adjust the issue plan by proposing, among others, to increase the number of A Shares to be issued to up to 1.45 billion A Shares. The adjusted issue plan was approved by the SASAC and our shareholders at an extraordinary general meeting, A Share class meeting and the H Share class meeting on October 12, 2012 and by the CSRC on December 7, 2012. On March 14, 2013, we obtained the approval from the CSRC on our proposed private placement of A Shares under such adjusted issue plan, with effective period of six months after the approval date. However, the CSRC temporarily retrieved its approval in July 2013 due to its on-going investigation of the sponsor of our proposed private placement of A Shares. The period of authorization to the Board relating to the adjusted issue plan was extended by our shareholders at the 2013 annual general meeting, A Share class meeting held on June 27, 2014 and H Share class meeting held on June 27, 2014, with an effective period of 12 months after the approval date. On January 4, 2015, we submitted the "Report regarding the resumption of the approval of non-public offering of shares of Aluminum Corporation of China Limited" to the CSRC. On April 24, 2015, we received the Approval in Relation to the Non-public Issuance of Shares by Aluminum Corporation of China Limited issued by the CSRC, pursuant to which we were approved to issue no more than 1,450,000,000 new shares. We completed the non-public issuance of A Shares on June 15, 2015 and issued an additional 1,379,310,344 A Shares pursuant to the specific mandate as approved at the annual general meeting of the Company on June 27, 2014. On June 15, 2015, we completed the non-public issuance of 1,379,310,344 A Shares. Upon completion, the total number of A Shares of the Company was increased from 13,524,487,892 to 14,903,798,236. Please refer to "- Subscription of Equity Interest of Certain Subsidiaries and Subsequent Issuance of Additional A Shares" for further changes of our issuance of A Shares.

Disposal of Aluminum Fabrication Business

We disposed of substantially all of our aluminum fabrication operations to Chinalco pursuant to the approval of shareholders at the 2012 annual general meeting on June 27, 2013.

On May 13, 2013, we submitted the tender notice to CBEX to dispose of the equity interest we held in eight aluminum fabrication enterprises, including Henan Aluminum, Chalco Southwest Aluminum, Chalco Southwest Aluminum Cold Rolling, Huaxi Aluminum, Qingdao Light Metal, Chalco Ruimin, Chalco Sapa Aluminum Products (Chongqing) Co., Ltd. and Guizhou Chalco Aluminum Co., Ltd. (collectively, "Aluminum Fabrication Interests") through open tender. Chinalco participated in and won the bid for the Aluminum Fabrication Interests on June 7, 2013. We entered into an agreement (the "Aluminum Fabrication Interests Transfer Agreement") with Chinalco on June 9, 2013 for the disposal of Aluminum Fabrication Interests for a consideration of RMB3,242.2 million. Such consideration was the initial bidding price, which was determined with reference to the appraised value of the Aluminum Fabrication Interests. Pursuant to the Aluminum Fabrication Interests Transfer Agreement, Chinalco agreed to pay the consideration in cash in two installments, namely, 30% of the consideration to be paid within five business days after the effective date of the agreement and 70% of the consideration to be paid by June 30, 2014. Chinalco must pay interest for the second installment for the period starting from the date immediately after the effective date until the payment date at the one-year lending rate set by the PBOC. The disposal was approved at the 2012 annual general meeting held on June 27, 2013 and we completed the disposal on June 27, 2013. Chinalco paid the consideration in full in June 2014.

As a condition of the disposal of the Aluminum Fabrication Interests, on June 9, 2013, we entered into an agreement with Chinalco to transfer the outstanding entrusted loans we provided to Henan Aluminum and Qingdao Light Metal as of December 31, 2012 to Chinalco for a consideration of RMB1,756.0 million. Such consideration was determined based on negotiations between the parties, with reference to the appraised total value of the loans. Pursuant to the agreement, Chinalco agreed to pay the consideration in cash in five equal installments of RMB351.2 million, with the last installment, together with the relevant interests at the one-year lending rate set by the PBOC, to be paid by June 30, 2017. The transfer was approved at the 2012 annual general meeting held on June 27, 2013 and we completed the transfer on June 27, 2013. The payment was fully settled by Chinalco in accordance with the agreement.

In addition, we entered into an agreement with Northwest Aluminum Fabrication Plant, a subsidiary of Chinalco, on June 6, 2013 to dispose of all the assets of Northwest Aluminum for RMB1,659.6 million. Such consideration was determined based on negotiations between the parties, with reference to the appraised net asset value of Northwest Aluminum. Pursuant to the agreement, Northwest Aluminum Fabrication Plant agreed to pay the consideration in cash in five equal installments of RMB331.9 million, with the last installment, together with the relevant interests at the one-year lending rate set by the PBOC, to be paid by June 30, 2017. The disposal was approved at the 2012 annual general meeting held on June 27, 2013 and we completed the disposal on June 27, 2013. The payment was fully settled by Northwest Aluminum Fabrication Plant in accordance with the agreement.

Disposal of Assets of Alumina Production Line of Guizhou Branch

On June 6, 2013, we entered into an agreement with Guizhou Aluminum Plant, a subsidiary of Chinalco, to dispose of the assets of the alumina production line of our Guizhou branch for a consideration of RMB4,429.0 million. Such consideration was determined based on negotiations between the parties, with reference to the appraised net asset value of such alumina assets of our Guizhou branch. Pursuant to the agreement, Guizhou Aluminum Plant agreed to pay the consideration in cash in five equal installments of RMB885.8 million, with the last installment, together with the relevant interests at the one-year lending rate set by the PBOC, to be paid by June 30, 2017. The disposal was approved at the 2012 annual general meeting held on June 27, 2013 and we completed the disposal on June 27, 2013. The payment was fully settled by Guizhou Aluminum Plant in accordance with the agreement.

We decided to dispose of the assets of the alumina production line of Guizhou branch because the district in which they were located had been changed from an industrial district to a commercial district based on the local urban plan, which will significantly increase Guizhou branch's environmental compliance costs. We built a new alumina refinery, Guizhou Huajin, in an area relatively close to major bauxite and coal mines in Guizhou Province, which commenced production with an annual capacity of 1.6 million tonnes of alumina in 2015.

Senior Perpetual Capital Securities Offering

In October 2013, we completed the issuance of US\$350 million in aggregate principal amount of 6.625% senior perpetual capital securities (the "2013 Senior Perpetual Securities") through Chalco Hong Kong Investment Company Limited (the "Bond Issuer"), our wholly-owned subsidiary, which was exempted from, and not subject to, registration under the Securities Act. The 2013 Senior Perpetual Securities are guaranteed by Chalco Hong Kong and its certain subsidiaries. The 2013 Senior Perpetual Securities also have the benefit of a keepwell deed dated October 29, 2013 entered into by the Issuer, the Company, Chalco Hong Kong and the trustee and a deed of equity interest purchase undertaking dated on October 29, 2013 entered into by the Company and the trustee, both deeds being executed in favor of the trustee. The 2013 Senior Perpetual Securities were listed on the Hong Kong Stock Exchange on October 30, 2013. The net proceeds from the issue of the 2013 Senior Perpetual Securities after deduction of issuance costs are RMB2,122.6 million and have been on-lent to the Company or any of its subsidiaries for general corporate use. Coupon payments of 6.625% per annum on the 2013 Senior Perpetual Securities are paid semi-annually in arrears from October 29, 2013, and may be deferred at our discretion unless, during the six-month period ending on the day before the relevant scheduled coupon payment date, we have, or the Bond Issuer or Chalco Hong Kong has, declared or paid a discretionary dividend, distribution or other discretionary payment on or in respect of, or have/has at its discretion repurchased, redeemed or otherwise acquired, any securities of lower or equal rank, subject to certain exceptions. The 2013 Senior Perpetual Securities have no fixed maturity and are callable only at our option on or after October 29, 2018, at their principal amounts together with any accrued, unpaid or deferred coupon interest payments. After October 29, 2018, the coupon rate would be reset every five calendar years to a rate of interest expressed as a percentage per annum equal to the sum of (a) the initial spread of 5.312 per cent, (b) the U.S. Treasury Rate, and (c) a margin of 5.00 per cent per annum. While any coupon interest payments are unpaid or deferred, we, Chalco Hong Kong, and the Bond Issuer shall not, subject to certain exceptions, declare or pay any discretionary dividends or make distributions or similar discretionary payments in respect of, or at its discretion repurchase, redeem or otherwise acquire for any consideration any securities of lower or equal rank. We redeemed the 2013 Senior Perpetual Securities in October 2018.

In April 2014, we completed the issuance of US\$400 million in aggregate principal amount of 6.25% senior perpetual capital securities (the “2014 Senior Perpetual Securities”) through the Bond Issuer, which was exempted from, and not subject to, registration under the Securities Act. The 2014 Senior Perpetual Securities are guaranteed by Chalco Hong Kong and its certain subsidiaries. The 2014 Senior Perpetual Securities also have the benefit of a keepwell deed entered into by the Bond Issuer, the Company, Chalco Hong Kong and the trustee and a deed of equity interest purchase undertaking entered into by the Company and the trustee, both deeds being executed in favor of the trustee. The 2014 Senior Perpetual Securities were listed on the Hong Kong Stock Exchange on April 22, 2014. The net proceeds from the issue of the 2014 Senior Perpetual Securities after deduction of issuance costs are RMB2,461.8 million and have been on-lent to the Company or any of its subsidiaries for general corporate use. Coupon payments of 6.25% per annum on the 2014 Senior Perpetual Securities are paid semi-annually on April 29 and October 29 in arrears from April 17, 2014, and may be deferred at our discretion. The first coupon payment date was April 29, 2014. The 2014 Senior Perpetual Securities have no fixed maturity and are callable only at our option on or after April 17, 2017 at their principal amounts together with any accrued, unpaid or deferred coupon interest payments. While any coupon interest payments are unpaid or deferred, we, the subsidiary guarantors and the Bond Issuer cannot declare or pay dividends or make distributions or similar discretionary payments in respect of, or repurchase, redeem or otherwise acquire any securities of lower or equal rank. After April 17, 2017, the coupon rate would be reset to a percentage per annum equal to the sum of (a) the initial spread of 5.423 per cent, (b) the U.S. Treasury Rate, and (c) a margin of 5.00 per cent, per annum. We redeemed the 2014 Senior Perpetual Securities in April 2017.

On October 27, 2015, our Company issued RMB2,000 million perpetual medium-term notes at an initial distribution rate of 5.50% (the “2015 Perpetual Medium-term Notes”). The proceeds from the issuance were RMB2,000 million and were used for repayments of interest-bearing loans and borrowings. Coupon payments of 5.50% per annum on the 2015 Perpetual Medium-term Notes are paid annually in arrears from October 29, 2015 and may be deferred at the discretion of our Company. The 2015 Perpetual Medium-term Notes have no fixed maturity and are callable only at our option on October 29, 2020 or any coupon distribution date after October 29, 2020 at their principal amounts together with any accrued, unpaid or deferred coupon distribution payments. The coupon distribution rate will be reset to a percentage per annum equal to the sum of (a) the initial spread of 2.61 per cent, (b) the China Treasury Rate, and (c) a margin of 300 Bps every five years after October 29, 2020. While any coupon distribution payments are unpaid or deferred, the headquarters of the Company cannot declare or pay dividends to shareholders or decrease the share capital, or make material fixed asset investments of the headquarters of the Company.

On October 31, 2016, the Bond Issuer issued US\$500 million senior perpetual securities (the “2016 Senior Perpetual Securities”) at a rate of 4.25%. The 2016 Senior Perpetual Securities are guaranteed by one of our subsidiaries, Chalco Hong Kong. The 2016 Senior Perpetual Securities also have the benefit of a keepwell deed entered into by the Bond Issuer, the Company, Chalco Hong Kong and the trustee. The 2016 Senior Perpetual Securities were listed on the Hong Kong Stock Exchange on November 7, 2016. The net proceeds from the issue of the 2016 Senior Perpetual Securities were approximately RMB3,374 million and were on-lent to the Company or any of its subsidiaries for general corporate use. Coupon payments of 4.25% per annum on the 2016 Senior Perpetual Securities have been made semi-annually on April 29 and October 29 in arrears from November 7, 2016 and may be deferred at our discretion. The first coupon payment date was April 29, 2017. The 2016 Senior Perpetual Securities have no fixed maturity date and are callable only at our option on or after November 7, 2021 at their principal amounts together with any accrued, unpaid or deferred coupon distribution payments. After November 7, 2021, the coupon distribution rate will be reset to a percentage per annum equal to the sum of (a) the initial spread of 2.931 per cent, (b) the U.S. Treasury Rate, and (c) a margin of 5.00 per cent per annum. While any coupon distribution payments are unpaid or deferred, we, the wholly-owned subsidiaries of Chalco Hong Kong as guarantors, and the Bond Issuer cannot declare or pay dividends or make distributions or similar discretionary payments in respect of, or repurchase, redeem or otherwise acquire any securities of lower or equal rank.

On October 19, 2018, we issued RMB2,000 million perpetual medium-term notes with an initial distribution rate at 5.10% (the “2018 Perpetual Medium-term Notes”). The proceeds from the issuance were RMB2,000 million. The proceeds were used for the repayment of interest-bearing loans and borrowings. Coupon payments of 5.10% per annum on the 2018 Perpetual Medium-term Notes are made annually in arrears from October 19, 2018 and may be deferred at our discretion. The 2018 Perpetual Medium-term Notes have no fixed maturity date and are callable only at our option on October 23, 2021 or any coupon distribution date after October 23, 2021 at their principal amounts together with any accrued, unpaid or deferred coupon distribution payments. The coupon distribution rate will be reset to a percentage per annum equal to the sum of (a) the initial spread of 2.61 per cent, (b) the China Treasury Rate, and (c) a margin of maximum 500 Bps every five years after October 23, 2021. While any coupon distribution payments are unpaid or deferred, we cannot declare or pay dividends to shareholders or decrease the share capital, or make material fixed asset investments.

On November 19, 2019, we issued RMB1,500 million perpetual medium-term notes with an initial distribution rate at 4.20% (the “2019 Perpetual Medium-term Notes”). The proceeds from the issuance were RMB1,499 million. The proceeds were used for the repayment of interest-bearing loans and borrowings. Coupon payments of 4.20% per annum on the 2019 Perpetual Medium-term Notes have been made annually in arrears from November 19, 2019 and may be deferred at our discretion. The 2019 Perpetual Medium-term Notes have no fixed maturity date and are callable only at our option on November 20, 2022 or any coupon distribution date after November 20, 2022 at their principal amounts together with any accrued, unpaid or deferred coupon distribution payments. The coupon distribution rate will be reset to a percentage per annum equal to the sum of (a) the initial spread of 1.31 per cent, (b) the China Treasury Rate, and (c) a margin of maximum 300 Bps every five years after November 20, 2022. While any coupon distribution payments are unpaid or deferred, the Company cannot declare or pay dividends to shareholders or decrease the share capital, or make material fixed asset investments.

Transfer of Equity Interest in Shanxi Huaxing

The Chalco Xing County Alumina Project, which was carried out by Shanxi Huaxing, commenced construction in May 2011 and undertook full operation in 2014. After completion of private placement of A Shares in June 2015, the Board resolved to replace the funds which have been invested by us in advance with the proceeds raised from the private placement of A Shares. In light of our strategic blueprint for the development of Shanxi aluminum recycle industrial park, we planned to introduce strategic investors for joint investment and cooperation to develop a new model of integrated coal, electricity and aluminum operations. In December 2015, we entered into an equity transfer agreement with Shenzhen CR Yuanta Asset Management Co., Ltd., a state-owned entity, to transfer 50% equity interests in Shanxi Huaxing, a wholly-owned subsidiary, through the Shanghai United Assets and Equity Exchange at a price of RMB2,351 million (the “2015 Equity Transfer Agreement”). The price was determined based on the appraisal value provided by an independent qualified appraisal company. According to the 2015 Equity Transfer Agreement, 30% of the consideration amounting to RMB705 million has been received by us in December 2015. In December 2016, Shenzhen CR Yuanta Asset Management Co., Ltd. transferred the 50% of equity interest in Shanxi Huaxing to Baotou Transportation Investment Group Co., Ltd. As agreed among Shenzhen CR Yuanta Asset Management Co., Ltd., Baotou Transportation Investment Group Co., Ltd. and the Company, Baotou Transportation Investment Group Co., Ltd., shall assume the payment obligation on the outstanding consideration of RMB1,646,035,160 payable by Shenzhen CR Yuanta Asset Management Co., Ltd. to the Company under the 2015 Equity Transfer Agreement and settle the outstanding consideration in full together with interest accrued thereon from January 1, 2017 to the date of payment before March 31, 2017. The payment was fully settled by Baotou Transportation Investment Group Co., Ltd. in March 2017.

In December 2018, we entered into an equity transfer agreement with Baotou Transportation Investment Group Co., Ltd., pursuant to which we agreed to acquire 50% equity interest in Shanxi Huaxing through the Shanghai United Assets and Equity Exchange at a price of approximately RMB2,665.2 million, which we paid in full in December 2018. Upon completion of the acquisition, Shanxi Huaxing became a wholly-owned subsidiary of the Company. The acquisition is conducted for the purpose of enhancing our profitability and is in line with our strategic layout of alumina and aluminum business, as the increase of our shareholding in Shanxi Huaxing, an alumina plant, is expected to enhance the synergy with our primary aluminum production in Shanxi, where we have newly added production capacity of primary aluminum.

Transfer of Shares of Jiaozuo Wanfang

On January 22, 2015 and January 23, 2015, we decreased our shareholding in Jiaozuo Wanfang by 4,758,858 shares through the securities exchange system of the Shenzhen Stock Exchange. In March 2015, we transferred 100,000,000 shares of Jiaozuo Wanfang to Geo-Jade Petroleum Corporation by way of agreement after the public solicitation for potential transferees. On June 25, 2015, we further transferred 42,550,900 shares of Jiaozuo Wanfang by way of block trading through the securities exchange system of the Shenzhen Stock Exchange. On December 18, 21 and 22, 2015, we reduced our shareholding in Jiaozuo Wanfang by 16,695,100 shares through the centralized bidding trading system of the Shenzhen Stock Exchange. From December 23 to 25, 2015, we reduced our shareholding in Jiaozuo Wanfang by 13,865,000 shares through the centralized bidding trading system of the Shenzhen Stock Exchange and block trading. As a result, we held 29,582,057 shares of Jiaozuo Wanfang as of December 31, 2015, representing 2.46% of the total share capital of Jiaozuo Wanfang. During the period from July 8, 2016 to September 27, 2016, we reduced our shareholding of Jiaozuo Wanfang by an aggregate of 16,628,098 shares via the Shanghai Stock Exchange centralized bidding trading system, representing approximately 1.39% of the total share capital of Jiaozuo Wanfang. The average price of reduction was approximately RMB8.73 per share. After the reduction, the Company remained holding 12,953,959 shares of Jiaozuo Wanfang, representing approximately 1.09% of its total share capital. During the period from September 29, 2016 to January 26, 2017, we reduced our shareholding of Jiaozuo Wanfang by an aggregate of 12,953,959 shares via the Shanghai Stock Exchange centralized bidding trading system, representing approximately 1.09% of the total share capital of Jiaozuo Wanfang. The average price of reduction was approximately RMB10.19 per share. After such reduction in our shareholding, we no longer hold any shares of Jiaozuo Wanfang.

Disposal of Certain Assets of Guizhou Branch

Guizhou branch entered into a land reserve acquisition cooperation agreement with the People's Government of the Baiyun District of Guiyang, Guiyang Land Reserve Center, and Guizhou Aluminum Plant on November 13, 2015. As the land of Guizhou Aluminum Plant occupied by the primary aluminum plant of Guizhou branch shall be transferred to the respective land resources and reserve authorities, Guizhou branch sold the relevant assets, including buildings and structures located on the land occupied by the primary aluminum plant of Guizhou branch, to the Guiyang Land Reserve Center for a total consideration of RMB1.95 billion. The consideration was determined based on the asset appraisal conducted by an independent asset appraisal firm.

Disposal of the Environmental Protection Business

On May 30, 2016, the Board approved the transfer of the environmental protection assets in relation to the desulfurization, denitration and dedusting of the coal-fired generating units of five entities, namely Lanzhou branch, Baotou Aluminum, Shandong Huayu, Maliantai Power Station and Liupanshan Power Station of Ningxia Energy, by way of public bidding. On June 29, 2016, the assets transfer agreement in relation to disposal of the above environmental protection assets were entered into between Beijing Aluminum SPC Environment Protection Tech Co., Ltd., which had won the bid for the acquisition of the assets, and us. Pursuant to the asset transfer agreement, the aggregate consideration for the above environmental protection assets disposal was RMB1,754 million which was paid in two installments in June 2016 and December 2016, respectively.

We decided to dispose the environmental protection assets to reduce our capital investments and generate cash flows. We have been complying with the relevant standards of environmental protection through professional services rendered by specialized environmental protection companies.

Development of Gold Leasing Financing

On May 30, 2016, the Board resolved to develop gold leasing business to financing working capital. Since 2016, we have entered into several agreements with Bank of Communications Co., Ltd., China Everbright Bank and Agriculture Bank of China to finance working capital via gold leasing. As of December 31, 2019, our remaining proceeds from gold leasing amounted to approximately RMB7,018.6 million, which has been used to replenish working capital for our production and operation.

Establishment of Industry Investment Fund

On May 23, 2017, the Company, Bank of Communications International Trust Co., Ltd. (“BOCOMMTRUST”) and Chinalco Jianxin Investment Fund Management (Beijing) Company Limited (“Chinalco Jianxin”) entered into a partnership agreement in relation to the establishment of Beijing Chalco Bocom Size Industry Investment Fund Management Partnership (Limited Partnership) (the “Industry Fund”). On September 27, 2017, the Company, BOCOMMTRUST, Chinalco Jianxin and Bocommtrust Asset Management Co., Ltd. (“Bocommtrust Asset”) entered into certain agreements with respect to Chinalco Jianxin’s withdrawal from and Bocommtrust Asset’s participation in the Industry Fund. On the same day, the Company, BOCOMMTRUST and Bocommtrust Asset entered into a capital contribution agreement and a new partnership agreement in relation to the Industry Fund. Pursuant to these agreements, the general partner of the Industry Fund changed from Chinalco Jianxin to Bocommtrust Asset while Chinalco Jianxin remained as the manager of the Industry Fund.

The Industry Fund would provide funding for the construction of our major projects, replenish our working capital and support our structural adjustment, transformation and upgrade. As of December 31, 2019, the Industry Fund made debt investments in certain of our subsidiaries and joint ventures with a total amount of RMB5,000 million, of which we had contributed RMB1,650 million.

Merger and Reorganization of Shanxi Branch and Shanxi Huaze

On August 8, 2017, we entered into a reorganization agreement with Zhangze Electric Power, pursuant to which we contributed certain assets related to alumina production of our Shanxi branch, with an appraised net value of RMB3,425.7 million equaling the appraised net value of the assets and liabilities of Shanxi branch, to Shanxi Huaze. The assets injected into Shanxi Huaze included, among others, inventories, buildings, structures, machinery and equipment. Upon completion of our asset contribution in 2017, our shareholding in Shanxi Huaze increased from 60% to 85.98% and Shanxi Huaze was renamed to Shanxi New Material.

Subscription of Equity Interest of Certain Subsidiaries and Subsequent Issuance of Additional A Shares (“Asset Restructuring”)

On December 4, 2017, we entered into certain investment and debt conversion agreements (the “Initial Agreements”) with Huarong Ruitong Equity Investment Management Co., Ltd. (“Huarong Ruitong”), China Life Insurance Company Limited (“China Life”), Shenzhen Zhaoping Chalco Investment Center LLP (“Zhaoping Investment”), China Pacific Life Insurance Co., Ltd. (“CPIC Life”), China Cinda Asset Management Co., Ltd. (“China Cinda”), BOC Financial Asset Investment Co., Ltd. (“BOC Financial”), ICBC Financial Asset Investment Co., Ltd. (“ICBC Financial”) and ABC Financial Asset Investment Company Limited (“ABC Financial”) (collectively, the “Restructuring Investors”). Pursuant to the Initial Agreements, Huarong Ruitong, China Life, Zhaoping Investment, CPIC Life, BOC Financial, ICBC Financial and ABC Financial have agreed to make cash contributions to our wholly-owned subsidiaries, Chalco Shandong, Zhongzhou Aluminum, Baotou Aluminum and Chalco Mining (collectively, the “Target Subsidiaries”), while the principal of loans owed by Chalco Mining to Huarong Ruitong, Zhaoping Investment, China Cinda and BOC Financial prior to signing of the Initial Agreements would be treated as capital contribution to Chalco Mining and converted into equity interest in Chalco Mining held by Huarong Ruitong, Zhaoping Investment, China Cinda and BOC Financial. The Restructuring Investors have agreed to acquire 30.80%, 36.90%, 25.67% and 81.14% of equity interest of Chalco Shandong, Zhongzhou Aluminum, Baotou Aluminum and Chalco Mining, respectively, with an aggregate capital contribution of approximately RMB12.6 billion. Under the Initial Agreements, we have also agreed to acquire equity interest held by the Restructuring Investors in the Target Subsidiaries with consideration in the form of our A Shares to be issued to the Restructuring Investors. On December 20, 2017, the Initial Agreements and the transactions contemplated thereunder were approved at our 2017 second extraordinary general meeting. In December 2017, the capital contribution to the Target Subsidiaries by the Restructuring Investors was completed in accordance with the terms of the Initial Agreements.

Subsequently, on January 31, 2018, we entered into equity acquisition agreements (the “Further Agreements”) with the Restructuring Investors. Pursuant to the Further Agreements, we have agreed to acquire all the equity interest held by the Restructuring Investors in the Target Subsidiaries with consideration in the form of A Shares of the Company to be issued to the Restructuring Investors (the “Proposed Issuance”). The number of A Shares in issue pursuant to the Proposed Issuance would equal the appraised value of equity interest held by Restructuring Investors in Target Subsidiaries as of December 31, 2017 determined by China United Assets Appraisal divided by the issue price. The aforementioned appraised value might be subject to further adjustment by competent PRC authorities upon filing of the valuation report by China United Assets Appraisal. The issue price has been set at RMB6.00 per A Share with reference to 90% of the average trading price of our A Shares during the last 60 trading days prior to January 31, 2018 (i.e., the last 60 trading days prior to the suspension of trading of our A Shares) in accordance with rules and regulations of the PRC applicable to transaction of this kind. The appraised value, subject to further adjustment, was RMB12.7 billion and therefore we would issue to the Restructuring Investors approximately 2.1 billion A Shares in aggregate, representing approximately 14.2% of the total issued share capital of the Company as of January 31, 2018 and approximately 12.4% of the enlarged total issued share capital of the Company upon completion of the Proposed Issuance. On July 30, 2018, we entered supplemental equity acquisition agreements with the Restructuring Investors, amending, among others, the final consideration of the proposed acquisition and the number of the consideration shares to be issued from approximately RMB12,703.7 million and approximately 2,117,280,800 to approximately RMB12,713.2 million and 2,118,874,715, respectively. The Proposed Issuance was approved by our shareholders, the SASAC and the CSRC in 2018. In February 2019, all equity interests of Target Subsidiaries held by the Restructuring Investors were transferred to us, which resulted in us holding 100% equity interests of all Target Subsidiaries. On February 25, 2019, we issued an aggregate of 2,118,874,715 A Shares to the Restructuring Investors and our total share capital increased from 14,903,798,236 shares to 17,022,672,951 shares. The shares issued to the Restructuring Investors can be traded on the Shanghai Stock Exchange after expiry on February 26, 2020 of the 12 month lock-up period.

Cash contributions received from the Restructuring Investors have been used by us for the repayment of loans. The Asset Restructuring has helped to reduce the gearing ratios of these subsidiaries and us as a whole.

Boffa Project

On June 8, 2018, Chalco Hong Kong and Chalco Guinea Company S.A., a wholly-owned subsidiary of Chalco Hong Kong, entered into a mining convention (the “Mining Convention”) with the Guinean government, pursuant to which Chalco Hong Kong agreed to provide investment funds while the Guinean government agreed to provide mining licenses and rights to transport mining products for the development and operation of the Boffa Project, a project for the construction and development of a bauxite mine located in Boffa, Guinea.

Based on our preliminary research and analysis and after taking into account various factors, including but not limited to (i) the bauxite reserve and the minable quantity in the mining area of the Boffa Project; (ii) the advancement and effectiveness of the existing development technologies; (iii) labor cost, transportation expense and other development costs and other factors, the total investment of the Boffa Project is estimated to be approximately US\$706 million, subject to adjustment pursuant to the actual needs, which will be mainly allocated in the construction of mines, ports and lightering system and is expected to be funded through capital investment together with shareholders’ loans or bank loans. According to our preliminary design plan, the total investment for the construction of mines is estimated to be approximately RMB3,088 million. As of December 31, 2019, an aggregate of RMB1,872 million of capital expenditure had been incurred for the construction of mines.

In accordance with the Mining Convention, a mining company (the “Mining Company”) and a port company (the “Port Company”) are established to act as the main operating bodies for mines construction and ports construction, respectively. In accordance with the Mining Convention, we own 85% and 95% equity interests in the Mining Company and the Port Company, respectively, while the Guinean government and its wholly-owned companies collectively own 15% and 5% equity interests in the Mining Company and the Port Company, respectively. Pursuant to the Mining Convention, Chalco Hong Kong shall grant the Guinean government and/or its wholly-owned companies an option to obtain additional equity interests in the Mining Company and grant Societe Guineenne de Patrimoine Minier, a company wholly owned by the Guinean government, an option to obtain additional equity interests in the Port Company (together, the “Options”). If the Options are exercised in full, our equity interests in the Mining Company and Ports Company will reduce to 65% and 90%, respectively. As of December 31, 2019, the Options had not been exercised.

With a large reserve of resources, we believe the Boffa Project would provide sustainable bauxite resources for our alumina production and its high ore grades would help reduce alkali and energy consumption in our alumina production. In addition, as the mines are close to port, we are able to consolidate inland waterway transportation and maritime transportation, which benefits long-term development of the project and effectively controls investment risks at the early stage.

The Boffa Project commenced construction in September 2018 with an expected annual bauxite output capacity of 12 million tonnes. By the end of 2019, the quarry of mine had been put into operation. The first shipment of bauxite was sent to China in February 2020.

Merger and Reorganization of Zunyi Alumina and Zunyi Aluminum

On June 21, 2018, in order to streamline our production chains, enhance synergistic effects and control operating costs, we entered into a contribution agreement with other shareholders of Zunyi Aluminum, pursuant to which we contributed all assets in Zunyi Alumina to Zunyi Aluminum. The appraised net value of Zunyi Alumina, equaling the appraised net value of its assets and liabilities, was RMB2,311 million. Upon completion of the merger, our shareholding in Zunyi Aluminum increased from 62.1% to 67.445%.

Controlling Shareholder's Shareholding Increase in the Company

On June 24, 2018, Chinalco notified us of its plan to increase its shareholding in us via the trading system of the Shanghai Stock Exchange in an amount of not less than RMB400 million and not more than RMB1 billion in 12 months. Chinalco would, based on its reasonable judgment on our share price as well as the fluctuations of our share prices and the overall trend in the capital market, gradually implement the plan on increase in shareholding to the extent not exceeding 2% of our total share capital. The purpose of such increases in shareholding is to boost confidence of investors, protect the interests of minority shareholders and stabilize the capital market based on Chinalco's confidence in the future development of the company and the recognition of our value.

For the period from June 25, 2018 to June 24, 2019, as the result of the aforesaid plan, Chinalco increased its shareholding in us by 160,512,964 A shares (representing approximately 0.94% of our total issued share capital as of June 24, 2019) in the amount of RMB608 million on a cumulative basis via the trading system of the Shanghai Stock Exchange. In addition, during the same period of time, Chinalco also, through its subsidiaries, had increased its shareholding in us by 115,276,000 H shares (representing approximately 0.68% of our total issued share capital as of June 24, 2019) in the amount of HK\$365 million on a cumulative basis via the trading system of the Hong Kong Stock Exchange.

Acquisition of Carbon Assets and Equity Interests

On August 30, 2018, our Group and the affiliates of Chinalco Assets entered into a series of assets transfer agreements and equity transfer agreements for the acquisition of certain carbon assets and equity interests from the affiliates of Chinalco Assets, including: (i) the assets of the carbon plant under Shandong Aluminum Industry Co., Ltd; (ii) the assets of the carbon plant under Pingguo Aluminum Company Limited; (iii) 49% equity interests of Baotou Sendu Carbon Company Limited; and (iv) 57.69% and 19.96% equity interests of Chibi Great Wall Carbon Products Company Limited from two separate shareholders. Upon completion of the acquisition, we expect this acquisition would help us consummate our industrial chain, ensure our steady production, and improve our competitiveness and anti-risk capabilities, as carbon products are one of major raw materials for production of primary aluminum. As of December 2018, we had paid the total consideration of RMB735.6 million in full and the acquisition had been completed.

Transfer Between China Copper and Yunnan SASAC

On November 13, 2018, China Copper, a wholly-owned subsidiary of our controlling shareholder, entered into a transfer agreement with Yunnan SASAC, pursuant to which Yunnan SASAC shall transfer its 51% equity interest in Yunnan Metallurgical Group Co., Ltd. to China Copper with no consideration. The transfer was approved by the SASAC on December 19, 2018, by the State Administration for Market Regulation on December 20, 2018 and by the CSRC on December 29, 2018. Chinalco completed the transfer on January 8, 2019. As Yunnan Aluminum, an affiliated company of Yunnan Metallurgical Group Co., Ltd., competes with us in the business segments of alumina and primary aluminum, on January 2, 2019, Chinalco, as the indirect controlling shareholder of Yunnan Aluminum and our direct controlling shareholder, issued a letter of undertakings on non-competition to us in order to address business competition and safeguard the legitimate interests of the Company and our minority shareholders. According to the letter of undertakings, Chinalco undertook to start in 2019 planning the integration of the businesses in which Yunnan Aluminum and we compete with each other, and address business competition between Yunnan Aluminum and us within five years.

Transfer of Primary Aluminum Capacity Quota of Shanxi Huasheng

On May 28, 2019, Shanxi Huasheng and Yixin Aluminum entered into a transfer agreement, pursuant to which Shanxi Huasheng agreed to sell to Yixin Aluminum the primary aluminum capacity quota of 190,000 tonnes. The total transfer consideration is RMB950 million with the transfer price of RMB5,000 per tonne. With the adjusted number of annual capacity quota finally determined by relevant PRC authority, we completed the transfer of the primary aluminum capacity quota of 170,000 tonnes to Yixin Aluminum with the total transfer consideration of RMB850 million in June 2019. We expect this transfer would help to reverse Shanxi Huasheng's losses, achieve its transformation and upgrading, and optimize our industrial layout and asset structure.

Proposed Issuance of H Shares

On June 25, 2019, our shareholders at the 2018 annual general meeting passed a special resolution, which will remain valid until the earliest of (i) the conclusion of our next annual general meeting, (ii) the expiration of 12 months following the date of passing the resolution, or (iii) the date on which the authority set out in this resolution is revoked or varied by a special resolution at a general meeting. The resolution authorizes us to issue up to 20% of the total nominal value of H Shares in issue as of the resolution date. Our Board has been authorized to determine the use of the proceeds. The proposed issuance is subject to all the necessary approval by the CSRC and/or other relevant PRC government authorities.

Capital Contribution to China Rare Metals and Rare Earths Company Ltd. with Gallium Assets

On August 27, 2019, we entered into a capital contribution agreement with China Rare Metals and Rare Earths Company Ltd., a subsidiary of Chinalco, pursuant to which we agreed to make a capital contribution of RMB352,848,100 to China Rare Metals and Rare Earths Company Ltd. with our gallium assets, which contribution were made in full in August 2019. Upon completion of the transaction, the shareholding proportion we hold in China Rare Metals and Rare Earths Company Ltd. will be increased from 14.62% to 23.94%, and the registered capital of China Rare Metals and Rare Earths Company Ltd. will be increased from RMB1,360,000,000 to RMB1,526,750,900. We expect this acquisition will help us revitalize gallium assets irrelevant to our principal businesses and increase investment returns by leveraging on China Rare Metals and Rare Earths Company Ltd.'s industrial advantages.

Capital Contribution to Yixin Aluminum

On December 10, 2019, we entered into a capital contribution agreement with Yixin Aluminum and its shareholders, pursuant to which we agreed to make a capital contribution of RMB850 million in cash to Yixin Aluminum, which we paid in full in December 2019. Upon completion of the transaction, we will hold 38.90% equity interests of Yixin Aluminum. We expect this capital contribution to facilitate us in participating in the green development layout on the integration of hydropower and aluminum in Yunnan Province and obtaining competitive assets for our principal business.

Subscription for A Shares of Yunnan Aluminum

On December 19, 2019, we entered into a shares subscription agreement with Yunnan Aluminum, pursuant to which we agreed to subscribe through non-public offering for 314,050,688 A shares of Yunnan Aluminum at a price of RMB4.10 per share with the total subscription amount of RMB1,287,607,820.80. The subscription price of RMB4.10 per A share was determined through bidding and based on the minimum issuance price of the non-public offering by Yunnan Aluminum, which represented 90% of the average trading price of the shares in the 20 trading days prior to the first day of the issuance period, namely December 13, 2019. We paid the consideration in full and 314,050,688 A shares of Yunnan Aluminum were registered under our name in December 2019, representing approximately 10.04% of the total share capital of Yunnan Aluminum. Pursuant to the shares subscription agreement, we shall not transfer the subscribed A shares thereto within 36 months from the listing date. We expect our subscription for A shares of Yunnan Aluminum will help resolve business competitions between Yunnan Aluminum and us and is in line with our development strategies and in our interests as a whole.

Construction Projects

As of the date of this annual report, we have undertaken a number of facility expansion projects in China. See “- D. Property, Plants and Equipment - Our Expansion.”

B. Business Overview

Our Principal Products

We are a leading enterprise in the non-ferrous metal industry in China. In terms of comprehensive scale, we ranked among the top enterprises in the global aluminum industry. We have benefited from the development of the PRC aluminum market, the world’s largest aluminum market. We refine bauxite into alumina, which is then smelted into primary aluminum. In addition to alumina and primary aluminum, we also produce and sell chemical alumina products (alumina hydrate and alumina-based industrial chemical products) and carbon products (carbon anodes and cathodes). We are also engaged in the trading and logistics of alumina, primary aluminum, other non-ferrous metal products, coal products and raw and ancillary materials in bulk manufactured by us or sourced from external suppliers domestically and abroad. In addition, we are engaged in coal mining and power generation. The remainder of our revenues was derived from research and development activities and other products and services. Accordingly, we organize and manage our operations in five business segments: alumina segment, primary aluminum segment, trading segment, energy segment and corporate and other operating segment. After elimination of inter-segment sales, revenues attributable to our alumina segment, primary aluminum segment, trading segment, energy segment, and corporate and other operating segment accounted for approximately 7.5%, 19.7%, 68.9%, 3.7% and 0.2%, respectively, of our total revenues in 2019.

Our alumina segment includes the mining and purchasing of bauxite and other raw materials, and production and sale of alumina as well as chemical alumina. Alumina accounted for approximately 88.1% of our total production volume for this segment in 2019. Chemical alumina products are used in the production of chemical, pharmaceutical, ceramic and construction materials. In the process of refining bauxite into alumina, we used to produce gallium as a by-product, which is a rare, high value metal with applications in the electronics and telecommunication industries. In August 2019, we made a capital contribution with all of our gallium assets to China Rare Metals and Rare Earths Company Ltd. and are currently not engaged in any gallium production. See “- A. History and Development of the Company - Capital Contribution to China Rare Metals and Rare Earths Company Ltd. with Gallium Assets” for details.

Our primary aluminum segment includes the procurement of alumina, other raw materials, supplemental materials and electrical power, the production and sale of primary aluminum and aluminum-related products, such as carbon products, aluminum alloy products and other aluminum products. Our principal primary aluminum products are ingots, molten aluminum and aluminum alloys, which accounted for approximately 29%, 38% and 33%, respectively, of our total production volume of primary aluminum in 2019. Our standard 20 kilogram remelt ingots are used for general aluminum fabrication in the construction, electricity, electronics, transportation, packaging, machinery and durable goods industries. We internally produce substantially all the carbon products used at our smelters and sell our remaining carbon products to external customers.

Our trading segment is mainly engaged in the trading of alumina, primary aluminum, aluminum fabrication products, other non-ferrous metal products, and crude fuels such as coal products, as well as supplemental materials and logistics and transport services to our internal manufacturing plants and external customers. We established our trading business under Chalco Trading as a separate segment in July 2010 as a result of our operational structural adjustment. Since 2014, we have established Chalco Materials, Chalco Logistics and Chalco Trading Group to continuously promote and deepen development of our trading business, jointly constituting our trading segment. Established in 2018, Chalco Trading Group has undertaken the businesses that used to be operated by Chalco Trading.

Our energy segment includes the research and development, production and operation of energy products, including coal mining and conventional coal-fire power generation as well as renewable energy generation such as wind power and solar power. We are also engaged in new energy equipment production. We established our energy segment in January 2013 as a result of our acquisition of Ningxia Energy in line with our development strategy to partially offset our future energy costs. In 2019, we supplied the majority of the electricity we generated for our own production use, supplied a portion of the coal output to our own electric power plant and sold the remaining portion to external customers. Ningxia Energy supplied the electricity it generated mainly to the state grid in China.

Our corporate and other operating segment mainly includes corporate and other aluminum-related research, development, and our other activities.

Our Production Capacity

As of December 31, 2019, our annual alumina production capacity and primary aluminum production capacity was approximately 18.86 million tonnes and 4.59 million tonnes, respectively. The following table sets forth the production capacity of each of our principal plants by business segment as of the indicated date:

Plant	As of December 31, 2019	
	Alumina	Primary Aluminum
	<i>(in thousand tonnes)⁽¹⁾</i>	
Guangxi branch	2,210	—
Zhongzhou Aluminum	3,050	—
Qinghai branch	—	420
Guizhou branch	—	—
Chalco Mining	2,410	—
Chalco Shandong	2,270	—
Shanxi New Material	2,600	424
Chongqing branch	800	—
Lanzhou Aluminum	—	450
Shanxi Huasheng	—	—
Zunyi Aluminum	1,000	375
Shandong Huayu	—	200
Baotou Aluminum ⁽²⁾	—	1,340
Zhengzhou Institute	20	—
Liancheng branch	—	550
Guizhou Huajin	1,600	—
Xinghua Technology	900	—
Shanxi Huaxing	2,000	—
Guizhou Huaren	—	400
Shanxi Zhongrun	—	432
Total	18,860	4,591

- (1) Production capacity is calculated based on designed capacity, which accounts for various assumptions including downtime for ordinary maintenance and repairs, the ore grade of bauxite feedstock and subsequent capacity modifications.
- (2) Including the primary aluminum production capacity of Inner Mongolia Huayun, a subsidiary of Baotou Aluminum.

In 2019, we produced approximately 13.80 million tonnes of alumina (excluding chemical alumina products), 3.80 million tonnes of chemical alumina products and 3.79 million tonnes of primary aluminum. Our production of alumina (with chemical alumina products included) and primary aluminum represented approximately 21.9% and 10.5%, respectively, of the total output of alumina (with chemical alumina products included) and primary aluminum in China in 2019.

The following table sets forth a breakdown of our production volume by product segment for the periods indicated:

Production Volume by Product	Year Ended December 31,		
	2017	2018	2019
	<i>(in thousand tonnes, except Gallium)</i>		
Alumina segment			
Alumina	12,810	13,510	13,803
Chemical alumina products	2,853	3,240	3,802
Gallium (in tonnes)	72	136	98
Primary aluminum segment			
Primary aluminum ⁽¹⁾	3,607	4,166	3,788
Carbon	1,962	2,010	1,472

- (1) Including ingots, molten aluminum and aluminum alloys.

Production Process

Alumina

Alumina is refined from bauxite, an aluminum-bearing ore, through a chemical refining process. The refining process applied is determined by the mineral composition of the bauxite used in production. Our refineries may employ the Bayer process, the Bayer-sintering series process, the Bayer-sintering combined process or the ore-dressing Bayer process. Most of the bauxite reserves in China contain diasporic bauxite, which contains high alumina content but relatively high silica content, resulting in bauxite reserves with low alumina-to-silica ratio. The Bayer process cannot efficiently refine diasporic bauxite that has not undergone processing to increase its alumina-to-silica ratio. The Bayer-sintering process and the Bayer-sintering combined process are suitable for refining low alumina-to-silica ratio bauxite. We have developed and improved these processes to increase our refining yield. In addition, we also produce some chemical alumina products (alumina hydrate and alumina-based industrial chemical products).

Primary Aluminum

We smelt alumina into primary aluminum through electrolytic reduction. The electrolytic process takes place in a reduction cell, or pot, a steel shell lined with carbon cathodes and refractory materials. Powerful electric currents are passed through the pot to produce molten aluminum. The molten aluminum is transferred to holding furnaces and then poured directly into molds to produce foundry ingots, or further refined to form fabricating ingots, which may be used directly in the aluminum fabrication process. The primary aluminum we produce is in the form of ingots, molten aluminum and aluminum alloys.

All of our primary aluminum smelters use pre-bake anode reduction pot-lines. In the pre-bake reduction process, the anodes are pre-formed in a separate facility where pollutants can be contained. The cells themselves are enclosed with removable panels so that the waste gas produced during the process can be extracted using large exhaust fans. Our waste gas is treated and purified to reduce dust and fluoride emissions to acceptable levels set by state environmental protection agencies.

Production Facilities

Alumina

We currently operate ten alumina refineries and one research institute with a total designed annual production capacity of approximately 18.86 million tonnes as of December 31, 2019. Two of our refineries are integrated with primary aluminum smelters. In 2019, we produced approximately 13.80 million tonnes of alumina, approximately 3.80 million tonnes of chemical alumina products and approximately 98 tonnes of gallium. The overall utilization rate for our refineries was 84% as of December 31, 2019.

In 2019, we supplied approximately 6.57 million tonnes, or 48%, of our total production of alumina to our own smelters and sold substantially all of the remaining alumina to other domestic customers. All of the chemical alumina products that we produced in 2019 were sold by alumina refineries directly to external customers or internally to Chalco Trading Group for subsequent external trading.

The following table sets forth the annual production capacity, output of alumina and chemical alumina products, utilization rate and production process applied in each of our alumina refineries and our Zhengzhou Institute:

	As of December 31, 2019		For the Year Ended December 31, 2019		
	Annual Production Capacity ⁽¹⁾	Utilization Rate ⁽²⁾	Alumina Production Output	Chemical Alumina Products Output	Production Process
			<i>(in thousand tonnes, except percentages)</i>		
Shanxi New Material	2,600	100%	1,771	95	Bayer-sintering
Chalco Mining	2,410	87%	1,235	99	Bayer-sintering
Chalco Shandong	2,270	100%	1,568	2,528	Sintering and Bayer
Zhongzhou Aluminum	3,050	100%	2,133	778	Sintering and Bayer
Guangxi branch	2,210	100%	2,460	128	Bayer
Zunyi Aluminum	1,000	100%	1,102	16	Bayer
Chongqing branch	800	—	—	—	Bayer-sintering
Zhengzhou Institute ⁽³⁾	20	—	—	71	Bayer
Guizhou Huajin	1,600	100%	1,613	—	Bayer
Xinghua Technology	900	61%	665	88	Bayer
Shanxi Huaxing	2,000	50%	1,256	—	Bayer
Total	18,860	84%	13,803	3,802	

(1) Production capacity is calculated based on designed capacity, which accounts for various assumptions including downtime for ordinary maintenance and repairs, the ore grade of bauxite feedstock and subsequent capacity modifications.

(2) Capacity utilization rate is calculated by dividing our utilized production capacity as of the date indicated by our total designed annual production capacity.

(3) The chemical alumina products produced at our Zhengzhou Institute are sold commercially and such sales are included in our total revenues.

Primary Aluminum

We operate eleven primary aluminum smelters in China. Our smelters had an aggregate annual production capacity of approximately 4.59 million tonnes as of December 31, 2019.

In 2019, we produced approximately 3.79 million tonnes of primary aluminum and the average utilization rate for our smelters was 80% as of December 31, 2019. The following table sets forth the annual production capacity, aluminum output, utilization rate and smelting equipment used in each of our aluminum smelters:

Plant	As of December 31, 2019		For the Year Ended December 31, 2019	
	Annual Production Capacity ⁽¹⁾	Utilization Rate ⁽²⁾	Aluminum Output ⁽³⁾	Smelting Equipment
	<i>(in thousand tonnes, except percentages)</i>			
Baotou Aluminum ⁽⁴⁾	1,340	100%	1,315	200Ka, 240Ka, 400Ka and 500Ka pre-bake
Guizhou branch ⁽⁵⁾	—	—	—	Secondary aluminum processing
Lanzhou Aluminum	450	99%	409	200Ka and 350Ka pre-bake
Qinghai branch	420	99%	408	180Ka and 210Ka pre-bake
Shandong Huayu ⁽⁶⁾	200	—	8	240Ka pre-bake
Shanxi Huasheng ⁽⁷⁾	—	—	61	300Ka pre-bake
Shanxi New Material	424	81%	366	300Ka pre-bake
Zunyi Aluminum	375	100%	405	200Ka and 400Ka pre-bake
Liancheng branch	550	28%	155	200Ka and 500Ka pre-bake
Guizhou Huaren	400	100%	480	500Ka
Shanxi Zhongrun	432	50%	181	500Ka
Total	4,591	80%	3,788	

- (1) Production capacity takes into account designed capacity, downtime for ordinary maintenance and repairs and subsequent capacity modifications.
- (2) Capacity utilization rate is calculated by dividing our utilized production capacity as of the date indicated by our total designed annual production capacity.
- (3) Includes ingots, molten aluminum and aluminum alloys.
- (4) Including the primary aluminum production facilities at Inner Mongolia Huayun, a subsidiary of Baotou Aluminum.
- (5) As of December 31, 2019, the primary aluminum production facilities in our Guizhou branch had been disposed of by us. Our Guizhou branch did not have annual primary aluminum production capacity as of December 31, 2019. We did not produce any primary aluminum at our Guizhou branch in 2019.
- (6) As of December 31, 2019, Shandong Huayu had halted its primary aluminum production. See “- Principal Facilities – Shandong Huayu” for details.
- (7) As of December 31, 2019, Shanxi Huasheng had terminated its primary aluminum production and transferred its primary aluminum capacity quota to Yixin Aluminum. See “- A. History and Development of the Company - Transfer of Primary Aluminum Capacity Quota of Shanxi Huasheng” for details.

Raw Materials

Alumina

Bauxite is the principal raw material in alumina production. Most of the bauxite in China is monohydrate, consisting mainly of Aluminosilicate compounds. Bauxite deposits have been discovered across a broad area of central China and are especially abundant in the southern and northern parts of central China. The largest bauxite deposit in China lies in the Shanxi Province.

Rock Formation and Mineralization. Except for our Guangxi Pingguo mine which is an accumulation deposit due to original erosion, the bauxite deposits of our mines in China usually have similar stratigraphic sequences. Primary bauxite deposit, as a type of sedimentary boehmite ($Al_2O_3 \cdot H_2O$) the Carboniferous or Permian age, is contained in clay rock, limestone or coal seams. A zony red shale is usually located at the bottom of the bauxite and the red seam distributes over the irregular “karst-type” erosion face on the top of Ordovician limestone. Aluminum deposits in northern China are usually covered with a very thick Quaternary weathering.

The thickness and quality of deposits vary with our mine locations. Quality is usually consistent in smooth sections but changes sharply in karst “billabong” terrain. The level of hardness of minerals also varies. A sequence that includes a seam of hard bauxite of fine quality in the middle and soft bauxite of inferior quality on the bottom and top seams is common in deposits.

Generally, deposits are horizontal or with an obliquity of 0 to 8 degrees, but there are also steep deposits at an angle of 75 degrees, such as in our Guizhou mine. Most of the original mineralization is not influenced by folds and faults, and some fractures of a low obliquity and folds emerge in certain deposits, which is evident in the Guizhou mine area. In most of the Guizhou mine area, the underground mining method must be used due to the obliquity of its bauxite body reaching 70 degrees with the influence of folds and several meters of dislocation arising from partial faults.

Economic Significance. Our bauxite deposits in China are divided into three groups. They are primarily distinguished by drill hole spacing and the composition of the deposit, which can encompass rock formations such as intercalated clays, bauxite, footwall iron clay or Ordovician limestone. Bauxite deposit groups vary in the thickness and mineral quality of its reserves.

We use the Chinese bauxite deposit estimation method, which is calculated using cut-off grades and thickness to outline continuous areas within the limits defined by samples of marginal grade. We utilize actual limiting sample points that are joined to create a polygonal outline, and grades are then calculated using a length weighted arithmetic average. We believe that the Chinese bauxite deposit estimation method of test boring, inspection pit, trial trench, density, tonnage analysis and calculation applied to the geological work of bauxite in China is an appropriate method to analyze these types of deposits.

Supply. To support the growth of our alumina production, we continuously seek opportunities to streamline and optimize our bauxite procurement. Except for Chalco Shandong, all of our refineries are located in the four provinces where over 90% of China's potentially mineable bauxite has been found. We generally source our bauxite from mines close to our refineries to control transportation costs. Historically, we have procured our bauxite supply principally from three sources:

- our own bauxite mining operations;
- jointly-operated mines; and
- other suppliers, which principally include small independent mines in China and international suppliers.

On average, our refineries consumed approximately 2.4 tonnes of bauxite to produce one tonne of alumina in 2019. Our mines supplied approximately 14.79 million tonnes of bauxite to our refineries in 2019. We purchase bauxite from a number of suppliers and do not depend on any supplier for our bauxite requirements. In 2019, bauxite secured from other suppliers accounted for approximately 62.4% of our total bauxite supply, primarily because our demand for bauxite exceeded the production of our mines.

The following table sets forth the volumes and percentages of bauxite supplied by our mines and other suppliers for the periods indicated:

	Year Ended December 31,					
	2017		2018		2019	
	Bauxite Supply	Percentage of Bauxite Supply %	Bauxite Supply	Percentage of Bauxite Supply %	Bauxite Supply	Percentage of Bauxite Supply %
	<i>(in thousand tonnes, except percentages)</i>					
Own mines	14,679.6	47.0	15,498.0	43.6	14,791.2	37.6
Other suppliers	16,566.5	53.0	20,043.6	56.4	24,499.9	62.4
Total	31,246.1	100.0	35,541.6	100.0	39,291.1	100.0

Own Mines. As of December 31, 2019, we owned and operated 18 mines in China that had approximately 253 million tonnes of aggregate bauxite reserves and we continue to explore new bauxite reserves to replenish our reserves. We had exploration rights to the bauxite mines in Laos through Lao Service Mining Co., Ltd., in which we held 60% of the equity interest. In April 2019, the Laos government cancelled the exploration rights held by Lao Service Mining Co., Ltd. as it had not continuously carried out related activities in the past years. We also hold the requisite mining permit for all the three bauxite mines in West Kalimantan, Indonesia through our 96.28% owned subsidiary, PT Nusapati Prima. Our bauxite deposits in Indonesia are lateritic gibbsite and were formed by weathering and leaching of aluminum-rich silicate rock in tropical climates. We have suspended our bauxite mining in Indonesia since September 2014 due to restraints on export of bauxite imposed by the Indonesian government. Since 2017, the Indonesian government has issued, and amended from time to time, relevant rules pursuant to which export of bauxite may be allowed upon satisfaction of certain requirements. We have been actively exploring the possibility of meeting these requirements. In addition, we own a bauxite mine in Guinea, and have the mining permit, through Chalco Guinea Company S.A., in which we indirectly held 85% of the equity interest.

For the years ended December 31, 2017, 2018 and 2019, we extracted approximately 17.0 million tonnes, 17.3 million tonnes and 14.4 million tonnes, respectively, of bauxite from our domestic mines. The decrease in the volume of bauxite extracted from our mines in 2019 was primarily because the time of effective production by certain of our mines was reduced in response to the higher standards and requirements of environmental protection in certain areas as well as we were in the process of application for the administrative approvals for mining in new mining areas while some of our existing mining areas had become depleted. Our reported bauxite reserves for our mines in China do not exceed the quantities that we estimate could be extracted economically if future prices were at similar levels to average historical prices for bauxite or aluminum for the years ended December 31, 2017, 2018 and 2019, or the three year historical contracted prices for such commodities. However, we do not use the three year historical bauxite or aluminum price to determine bauxite reserves, nor did we utilize any currency conversion factors or pricing related mechanisms. Instead, the primary criteria are the specifications required by our aluminum refineries, as well as certain modifying factors that are dependent on reserve quality.

The following table sets forth information for our mines as of December 31, 2019:

Mine	Location	Nature of ownership	Mining method	Permit Renewal ⁽¹⁾	Present Condition/ Current Stage of Exploration	Bauxite Production (in thousand tonnes)
Pingguo mine	Guangxi Zhuang Autonomous Region, China	100% owned and operated by Chalco	Open pit	June 2028 - April 2036	Fully developed and operational	5,988
Guizhou mine ⁽²⁾	Guizhou Province, China	100% owned and operated by Chalco	Open pit/underground	March 2019 ⁽³⁾ - December 2038	Partly developed and operational	1,921
Zunyi mine	Guizhou Province, China	100% owned and operated by Chalco	Open pit/underground	February 2020 – May 2029	Partly developed and operational	904
Xiaoyi mine	Shanxi Province, China	100% owned and operated by Chalco	Open pit	June 2018 ⁽³⁾ - September 2031	Partly developed and operational	843
Shanxi Other Mines	Shanxi Province, China	100% owned and operated by Chalco	Open pit/underground	September 2017 ⁽³⁾ - July 2035	Partly developed and operational	560
Mianchi mine	Henan Province, China	100% owned and operated by Chalco	Open pit/underground	August 2020 - October 2031	Partly developed and operational	375
Luoyang mine	Henan Province, China	100% owned and operated by Chalco	Open pit/underground	June 2022 - October 2031	Partly developed and operational	379
Xiaoguan mine	Henan Province, China	100% owned and operated by Chalco	Open pit/underground	June 2019 ⁽³⁾ - October 2031	Fully developed and operational	512
Gongyi mine	Henan Province, China	100% owned and operated by Chalco	Open pit/underground	June 2020 - April 2029	Fully developed and operational	70
Dengfeng mine	Henan Province, China	100% owned and operated by Chalco	Open pit/underground	September 2020 - June 2026	Partly developed and operational	11
Xinmi mine	Henan Province, China	100% owned and operated by Chalco	Open pit/underground	February 2020 ⁽³⁾ - August 2021	Partly developed and operational	8
Sanmenxia mine	Henan Province, China	100% owned and operated by Chalco	Underground	November 2021 - April 2027	Fully developed and operational	445
Xuchang mine	Henan Province, China	100% owned and operated by Chalco	Open pit/underground	February 2019 ⁽³⁾ - August 2024	Partly developed and operational	102
Jiaozuo mine	Henan Province, China	100% owned and operated by Chalco	Open pit/underground	September 2018 ⁽³⁾ - October 2024	Partly developed and operational	111
Pingdingshan mine	Henan Province, China	100% owned and operated by Chalco	Open pit/underground	January 2021 - October 2024	Partly developed and operational	61
Yangquan mine	Shanxi Province, China	100% owned and operated by Chalco	Open pit	September 2031 - May 2036	Partly developed and operational	133

Mine	Location	Nature of ownership	Mining method	Permit Renewal ⁽¹⁾	Present Condition/ Current Stage of Exploration	Bauxite Production (in thousand tonnes)
Nanchuan mine	Chongqing Municipality, China	100% owned and operated by Chalco	Underground	December 2022 - November 2026	In preparation for restarting operation	—
Huaxing mine	Shanxi Province, China	100% owned and operated by Chalco	Underground	August 2020 - September 2020	Fully developed and operational	2,018
PT ALUSENTOSA	West Kalimantan, Indonesia	Owned and operated by PT Nusapati Prima, a 96.28% subsidiary of Chalco	Open pit	December 2027	Suspended production	—
PT KALMIN	West Kalimantan, Indonesia	Owned and operated by PT Nusapati Prima, a 96.28% subsidiary of Chalco	Open pit	December 2027	Suspended production	—
PT VISITAMA	West Kalimantan, Indonesia	Owned and operated by PT Nusapati Prima, a 96.28% subsidiary of Chalco	Open pit	November 2038	Pending production commencement	—
Boffa bauxite mine	Boffa, Guinea	Owned and operated by Chalco Guinea Company S.A., an 85% subsidiary of Chalco	Open pit	July 2033	Under construction	—

- (1) All conditions to retain our properties or leases have been fulfilled as of December 31, 2019. Each mine may be covered by one or more mining permits or exploration permits and the range of permit renewal dates is set forth above.
- (2) Including both Guizhou No. 1 mine and Guizhou No. 2 mine.
- (3) We are in the process of renewing these permits.

We are required to obtain mining rights permits to conduct mining activities. Under PRC laws and regulations, a mining enterprise must prepare and submit exploration reports for a mine to the local government to obtain a mining rights permit for a mine. A mining right owner is also permitted to lease the mining right through a lease arrangement. The mining rights permit is subject to renewal on a regular basis.

Furthermore, the mining right owner is required to obtain land use rights on the land in order to operate the mines. We lease the land use rights relating to our mines in China from Chinalco pursuant to a land use rights lease agreement that became effective upon our formation. Chinalco's land use rights relating to over 90% of our mining properties in China are for 50-year terms beginning on July 1, 2001. The remaining land use rights relating to other mines in China are for shorter terms, some as short as one year. All of our land use rights lease agreements end on the expiry date of the mining rights or the end of the working life of the mine, whichever is earlier. Both the land use rights and land use rights lease agreements are renewable.

For our mines in Indonesia and Guinea, neither proven nor probable reserves have been established in accordance with United States Securities and Exchange Commission Industry Guide 7 as of the date of this annual report ("Industry Guide 7"). The following table sets forth certain estimated details of the reserves for our mines in China as of December 31, 2019:

Mine	Reserves ⁽¹⁾⁽²⁾			Ratio of Average A/S ⁽³⁾
	(million tonnes)	Al ₂ O ₃	SiO ₂	
Pingguo mine	80.08	52.96	4.94	10.72
Guizhou mine ⁽⁴⁾	41.68	64.15	9.06	7.08
Zunyi mine	10.36	59.17	10.59	5.59
Xiaoyi mine	10.29	65.74	12.08	5.44
Shanxi Other Mines	17.73	63.15	13.20	4.78
Mianchi mine	2.60	63.52	12.01	5.29
Luoyang mine	2.53	61.25	10.17	6.02
Xiaoguan mine	17.83	64.26	13.45	4.78
Gongyi mine	2.31	64.91	12.94	5.02
Dengfeng mine	1.25	61.84	13.22	4.68
Xinmi mine	1.08	65.51	12.77	5.13
Sanmenxia mine	42.10	63.01	12.97	4.86
Xuchang mine	1.11	62.88	9.07	6.94

Mine	Reserves ⁽¹⁾⁽²⁾	Al ₂ O ₃	SiO ₂	Ratio of
	(million tonnes)			Average A/S ⁽³⁾
Jiaozuo mine	0.24	61.50	12.51	4.92
Pingdingshan mine	2.92	63.06	13.19	4.78
Yangquan mine	1.01	58.35	13.95	4.18
Nanchuan mine	14.19	58.53	15.50	3.77
Huaxing Mine	3.53	62.12	8.87	7.00
Total (average) reserves	252.83	59.79	9.74	6.14
By reserve type				
Proven reserve	77.04	60.67	10.29	5.90
Probable reserve	175.78	59.41	9.49	6.26
Total (average) reserves	252.83	59.79	9.74	6.14

- (1) Our reserves take into consideration mining dilution and loss factors, which generally vary from 5% to 10% and are based on the planned mining method and selected drill data for each site.
- (2) Our metallurgical recovery factors are calculated in accordance with the relevant PRC mining standards and vary from mine to mine.
- (3) Refers to the ratio of average grade of Al₂O₃ to the average grade of SiO₂ of the reserves.
- (4) Including both Guizhou No. 1 mine and Guizhou No. 2 mine.

We have been in compliance with the National Mining Safety Law and related rules and regulations in China. We closely supervise and routinely inspect mining conditions with continual implementation of safety measures and procedures at our own bauxite mines and safety training for our mining personnel. In 2019, we extracted approximately 14.4 million tonnes of bauxite from our domestic mines and did not experience any mining operation related accidents that involved serious work injuries or death.

Other Suppliers. In addition to our mines, we also source bauxite from other suppliers. The majority of other domestic suppliers are small independent mines. Small independent mines are not affiliated with us and generally have annual bauxite production capacities not exceeding 200,000 tonnes. These mines have been an important source of bauxite for our operations. We purchase bauxite directly from small independent mines or through local distributors that procure bauxite from these mines. In addition, we also secure a portion of bauxite overseas. Bauxite secured from other suppliers accounted for 62.4% of our total bauxite supply in 2019.

Bauxite Procurement. The corporate management department at our headquarters is responsible for the oversight and coordination of our supply of bauxite in general. The marketing and procurement department is responsible for management and coordination of procurement of imported bauxite. To determine how our bauxite requirement will be allocated among our principal sources each year, we first estimate our total bauxite needs for the year. Based on market conditions, production costs and other factors, we determine the amount of bauxite that we wish to source from our mines, and the remaining requirements from other suppliers.

Alumina-to-Silica Ratio. The production method for alumina refining is determined by the mineral composition of the bauxite, in particular, its alumina-to-silica ratio. Most of the bauxite reserves in China are diasporic with low alumina-to-silica ratios. Based on our current technology and economic considerations, an efficient application of the Bayer process requires bauxite with an alumina-to-silica ratio of 5:1 or higher, while the Bayer-sintering process can refine bauxite with an alumina-to-silica ratio as low as 4:1. In 2019, the average alumina-to-silica ratio of the proven and probable reserves of our mines ranges from approximately 3.77:1 to 10.72:1.

Prices. There is neither governmental regulation on bauxite prices nor an official trading market for bauxite in China. We negotiate bauxite prices with our suppliers based on ore quality, mining costs, market conditions, transportation costs and various governmental taxes or levies, including a resource tax imposed by local governments. Our total bauxite cost is currently influenced by the following factors:

- the cost of our mining operations;
- the market conditions relating to purchases from small independent mines; and

- the market conditions relating to purchases from overseas.

The average purchase price of bauxite per tonne from our other suppliers in 2017, 2018 and 2019 was approximately RMB369, RMB413 and RMB430 respectively. The average cost of bauxite per tonne from our mines in 2017, 2018 and 2019 was approximately RMB226, RMB246 and RMB242, respectively.

We purchase a substantial amount of bauxite to satisfy our alumina production needs. Additionally, to fully utilize the bauxite from our mines, we refine all bauxite that meets the minimum technical requirements for our production of alumina. We also purchase higher grade ore from other suppliers and blend the ore of various grades to meet the technical requirements for our alumina production. This practice allows for flexibility and the inclusion of lower grade bauxite to optimize the use of bauxite deposits available to us. We do not use our historical average purchase prices or any other historical index to estimate our bauxite reserves.

The following table sets forth our capital expenditures for our bauxite mines for the periods indicated:

	Year Ended December 31,		
	2017	2018	2019
	<i>(RMB in thousands)</i>		
Capital Expenditures			
Infrastructure construction	405,920.0	368,357.4	1,314,802.9 ⁽¹⁾
Facility upgrade	24,016.9	74,632.7	6,079.8
Total	429,936.9	442,990.1	1,320,882.7

- (1) The significant increase in capital expenditures on infrastructure construction in 2019 was primarily attributable to the construction of the Boffa Project. See “– A. History and Development of the Company – Boffa Project” for more details.

Primary Aluminum

An average of approximately 1.91 tonnes of alumina and 13,350 kWh of electricity was required to produce one tonne of primary aluminum ingots in 2019.

Alumina and electricity, the two principal components of costs in the smelting process, accounted for approximately 43% and 34%, respectively, of our unit primary aluminum production costs in 2019. Apart from alumina and electricity, we also require carbon anodes, carbon cathodes, fluoride salt and cryolite for our smelting operations.

Alumina is the main raw material used in the production of primary aluminum. Our primary aluminum plants that do not have integrated alumina refining operations onsite obtain alumina internally from our alumina refineries located elsewhere or externally on the market.

Supplemental Materials, Electricity and Fuel

The marketing and procurement department at our headquarters coordinates and manages our supply chain for all our major raw materials in conjunction with the procurement center at each production facility, which manages the logistics and inventory of raw materials locally. We are able to purchase diesel, the main fuel used by our mining and manufacturing equipment, from the public markets, and we source our water from local rivers, lakes or underground sources.

Alumina

Electricity, coal, alkali (caustic soda or soda ash) and natural gas are the principal materials and energy used in our alumina production. Electricity is one of the principal cost components in our refining process. We generate electricity at a number of alumina refineries and purchase our remaining electric power requirements from regional power grids at government-mandated rates or directly from power generation enterprises. Most of our power supply agreements have a term of one year and are renewed by mutual agreement. Power prices in China can vary, sometimes substantially, from one region to another, based on demand and power production costs in the region. Power costs for our various alumina refineries vary accordingly.

Large quantities of coal are used as a reducing agent and fuel to produce steam and gas in the alumina refining process. As of December 31, 2019, we held minority interests in a number of coal mining enterprises, including Shanxi Jiexiu, Qinghai Energy, Xuehugou Coal Industry Co., Ltd., Huasheng Wanjie Coal Co., Ltd., Dongdong Coal, Chalco Liupanshui, Huozhou Coal Group Xingshengyuan Coal Co., Ltd., and Guizhou Yuneng. We hold 70% of the equity interest in Gansu Huayang, which holds exploration rights for certain portion of Luochuan mine in Gansu Province. We have also acquired 70.82% of the equity interest in the Ningxia Energy, which holds mining rights for coal deposits in Ningxia Autonomous Region.

Guizhou Yuneng, an associate company in which we hold 25% of the equity interest, has been under development. In 2019, one of the coal mines under its construction was put into production, and another coal mine under its construction is expected to be put into operation in May 2020. The operation of Huozhou Coal Group Xingshengyuan Coal Co., Ltd. has been suspended for technological upgrade. Chalco Liupanshui filed bankruptcy in 2019 as a result of the supply-side structural reform carried out by the PRC government in the coal industry and the bankruptcy has been accepted by the court. The rest of the coal mining enterprises in which we directly or indirectly have minority equity interests are currently in the extraction or trial production stage. See “- D. Property, Plants and Equipment” for details of coal mines that we operate. By investing in coal mining enterprises and acquiring mining rights for coal deposits, we plan to partially offset our future energy costs.

Alkali is used as a supplemental material in alumina refining. The Bayer-sintering process and the Bayer-sintering combined process require soda ash while caustic soda is used in the Bayer process. Our alumina refineries use natural gas and coal gas as fuel to refine alumina. There is no governmental regulation of the prices of coal, alkali or fuel. We purchase these raw materials from external suppliers under negotiated supply contracts, which we believe are competitively priced. We have not experienced difficulty in obtaining these materials in sufficient quantity and at acceptable prices.

Primary Aluminum

Electricity, carbon anodes and cathodes are the principal materials and energy used in our smelting process. Smelting primary aluminum requires a substantial and continuous supply of electricity. The availability and price of electricity are key factors in our primary aluminum production. See “Item 5. Operating and Financial Review and Prospects - A. Operating Results - Overview - Factors Affecting Our Results of Operations - Manufacturing Costs.”

We generate electricity at four of our smelters to supply a portion of the electricity consumed by these smelters. We purchase our remaining electric power requirements directly from power generation enterprises. As of December 31, 2019, nine of our smelters had direct purchase arrangement with power generation enterprises. Direct purchase transactions are normally organized by the local government and the direct purchase agreements are entered into annually. Because power prices in China vary from one region to another, power costs for our various smelters could vary substantially. The average electricity cost (including tax) of our smelters was approximately RMB0.32/kWh in 2019, which decreased by 4% compared to 2018, primarily due to the decrease in outsourced electricity price resulting from our negotiation with electric power plants and the adjustments of our production capacity of primary aluminum, including halting the primary aluminum production by Shandong Huayu and Shanxi Huasheng, which smelters used to incur relatively high electricity costs.

Carbon anodes and cathodes are key raw materials in the smelting process. We are generally able to manufacture carbon anodes necessary for the operations of our smelters. In addition, our Qinghai branch possesses production capacity of carbon cathodes and is able to manufacture carbon cathodes products.

Sales and Marketing

We coordinate substantially all of our sales and marketing activities for our self-produced alumina products and some of our sales and marketing activities for our self-produced primary aluminum products through Chalco Trading Group. Our subsidiaries and branches sell some of our self-produced primary aluminum products directly to external customers. Our alumina refineries sell our self-produced chemical alumina products directly to external customers or indirectly through Chalco Trading Group for subsequent external trading. For all of our self-produced products that are sold either through Chalco Trading Group for subsequent external sale or directly to external customers, our subsidiaries and branches play an important role in providing after-sale services and strengthening our presence in the marketplace. Since late 2009, we also have been engaged substantially in the trading of non-ferrous metal products including alumina, primary aluminum, copper, zinc and lead as well as coal products that we source from third-party suppliers through Chalco Trading Group, or previously Chalco Trading.

Alumina

We sell our self-produced alumina to external customers primarily through Chalco Trading Group, giving priority to customers with whom we have long-standing relationships and who have established a strong credit history, after reserving sufficient alumina for our forecasted primary aluminum production. In 2019, we supplied approximately 6.57 million tonnes of alumina produced at our alumina refineries to our smelters, which represented approximately 48% of our total alumina production, and sold the remainder to our customers. In addition, we also procure and sell outsourced alumina under long-term agreements or on the spot market through Chalco Trading Group. We sold approximately 2.26 million tonnes of outsourced alumina in 2019.

The sales prices of alumina that our alumina refineries sell internally to Chalco Trading Group are determined based on our budgeted sale prices, spot market prices and the prices of primary aluminum on SHFE. Chalco Trading Group coordinates the external negotiation and execution of sales contracts of our alumina products. Chalco Trading Group sells our self-produced alumina and alumina sourced from third-party suppliers to customers throughout China. Most of our major customers in the past three years have been domestic smelters. We primarily sourced alumina from third-party suppliers on the spot market, and we are normally required to pay the full price of the outsourced alumina before each delivery.

Chalco Trading Group sells our self-produced alumina and outsourced alumina under spot sales agreements and long-term sales agreements with terms ranging from one year to three years. Our long-term sales agreement for alumina normally sets forth the quantity of alumina to be sold by us in each month and each year, the price determination mechanism, payment method, place of delivery and delivery method. Places of delivery under our sales agreements are arranged to be where we could efficiently manage the transportation of alumina and help reduce logistics cost. Our customers are normally required to pay for their procurement before each delivery. As a result, the spot price of alumina and fluctuations of primary aluminum prices on the SHFE affect the alumina prices at which we sell.

Chalco Trading Group sets the price for the external sales of alumina products after taking into account the following factors:

- international and domestic supply-demand situation;
- CIF Chinese ports prices for alumina imports into China and other relevant import expenses;
- international and domestic alumina transportation costs;
- effects of the PRC government's policies on raw materials required by our alumina refineries; and
- our short-term and mid-term projections for alumina prices.

Primary Aluminum

We sell all of our self-produced and outsourced primary aluminum to domestic customers. We expect China to remain our key market for primary aluminum for the foreseeable future. Customers of our primary aluminum products principally consist of aluminum fabricators and distributors that resell our primary aluminum products to aluminum fabricators or other purchasers.

To improve the efficiency of our distribution, we divide our China market into the following regions: southern China (including Guangdong and Fujian Provinces); eastern China (including Jiangsu and Zhejiang Provinces and Shanghai Municipality); southwestern China (including Sichuan Province and Chongqing Municipality); the Beijing-Tianjin-Tanggu area; and central China. In general, we satisfy each purchase order with products from our nearest smelter to minimize transportation costs.

Our primary aluminum smelting subsidiaries and branches sell a portion of our primary aluminum output directly to external customers. Each of our smelters is normally responsible for the sale of products to the customers from neighboring markets, negotiating the pricing and delivery terms based on market conditions.

Our primary aluminum smelting subsidiaries and branches also sell a portion of our primary aluminum output internally to Chalco Trading Group at prices based on the spot prices of primary aluminum on Yangtze or Nanchu. We establish pricing guidelines for Chalco Trading Group to conduct external domestic sales of our self-produced primary aluminum products, taking into account four main factors: the primary aluminum spot prices and futures price on the SHFE; spot prices in the regions of eastern China and southern China; our production costs and expected profit margins; and supply and demand. Chalco Trading Group then coordinates the external sales of primary aluminum. Chalco Trading Group sells our self-produced primary aluminum products to external customers through the following three channels:

- Contract sales. Most of our primary aluminum sales are made pursuant to contracts entered into directly with our long-standing customers. The terms for our sales contracts for primary aluminum are typically one year. We price our primary aluminum products based on the SHFE prices and spot market prices for primary aluminum.
- Sales on the SHFE. As part of our effort to manage market risk, we sell a portion of our primary aluminum products on the SHFE through futures contracts with terms ranging from one month to twelve months to hedge against declines in primary aluminum prices.
- Sales on the spot market. We also sell our primary aluminum products on the spot market at prices with reference to various factors, such as market spot prices and transportation costs.

In addition, we also procure and sell outsourced primary aluminum on the spot market or through short-term futures and options transactions. We determine our sales prices of the outsourced primary aluminum through negotiations with our customers, taking into consideration factors including our procurement prices and the prevailing market conditions. We sold approximately 1.03 million tonnes of outsourced primary aluminum in 2019.

Chemical alumina products and Gallium

Chemical alumina products are derived from our alumina production. We adjust our production of these products based on market demand. Our alumina refineries sell our chemical alumina products directly to external customers or indirectly to external customers through Chalco Trading Group for subsequent external trading. We sell most of our chemical alumina products in China. Prices for our chemical alumina products are determined through negotiations with our customers, taking into consideration the market conditions.

In addition, in the process of refining bauxite into alumina, we used to produce gallium as a by-product. We adjusted our production of gallium based on market demand and sold all of gallium in China. Prices for our gallium were determined through negotiations with our customers, taking into consideration the market conditions. Our total sales of gallium in 2017, 2018 and 2019 amounted to approximately RMB74 million, RMB147 million and RMB97 million, respectively. In August 2019, we made a capital contribution with all of our gallium assets to China Rare Metals and Rare Earths Company Ltd. and are not engaged in gallium production currently. See “- A. History and Development of the Company - Capital Contribution to China Rare Metals and Rare Earths Company Ltd. with Gallium Assets” for details.

Coal

Ningxia Energy sells a portion of its self-produced coal directly to external customers through short-term contracts at prices determined through negotiations with our customers, taking into consideration factors including our procurement prices and prevailing market conditions. Ningxia Energy consumes the rest of its self-produced coal at its own electric power plant.

In addition, we also procure and sell outsourced coal under long-term agreements or on the spot market through Chalco Trading Group. We sold approximately 6.60 million tonnes of outsourced coal in 2019.

Trading of Outsourced Non-ferrous Metal Products and Other Materials

Since late 2009, we have been actively engaged in the trading of alumina and primary aluminum sourced from third-party suppliers. Please see “- Alumina” and “- Primary Aluminum” for more details. Through Chalco Trading Group, we also sell other non-ferrous metal products such as copper, zinc and lead as well as coal products that we procure from our third-party suppliers to external customers on the spot market or under long-term sales agreements. Please see “- Coal.” In 2019, we sold approximately 1.42 million tonnes of outsourced copper, zinc and lead. In addition, we also sell outsourced raw and ancillary materials such as iron ore, charred coal and cathode copper in bulk to customers such as steel manufacturers and copper processing companies on the spot market.

Chalco Trading Group has a team with trading expertise to conduct research on the markets of non-ferrous metal products and other materials. From time to time, we may enter into futures and options transactions to hedge against price fluctuations in the non-ferrous metal product market.

Delivery

We rely on rail shipping and trucks for the delivery of products within China.

Our alumina is transported by rail or trucks, and transportation costs are generally borne by our customers and excluded from our sales prices. For long-distance deliveries, we maintain spur lines connecting our plants to the national railway routes.

Most of our primary aluminum products are transported by rail, and our coal products are transported both by trucks and by rail.

Rail shipping on the PRC national railway system is subject to government mandated pricing.

Principal Facilities

Our principal facilities include 22 principal production plants and our Zhengzhou Institute. Set forth below is a description of our principal production plants.

Guangxi Branch

Our Guangxi branch commenced operations in 1994 and is located in Guangxi Zhuang Autonomous Region in southwestern China, an area rich in bauxite reserves. Our Guangxi branch obtains bauxite delivered via highway from our Pingguo mine, one of our wholly-owned mines, located less than 17 kilometers from our Guangxi branch.

Our Pingguo mine contains large, easily exploitable bauxite reserves with high alumina-to-silica ratios. Our Guangxi branch is our only principal refinery that exclusively uses the Bayer process. With technology and production equipment imported from Europe, the Guangxi refinery features a high level of automation and energy efficiency. Since its inception, we have continually increased the designed production capacity at this branch by overcoming production bottlenecks and investing in capacity expansions. Guangxi branch had an annual alumina production capacity of approximately 2,210,000 tonnes as of December 31, 2019. In 2019, our Guangxi branch produced approximately 2,459,840 tonnes of alumina, along with approximately 128,030 tonnes of chemical alumina products.

Guizhou Branch

Our Guizhou branch commenced its smelting operations in 1966 and was subsequently expanded to include alumina refining operations in 1978. Our Guizhou branch used 160Ka and 230Ka pre-bake reduction pot-lines in its primary aluminum production. The smelter in our Guizhou branch has undergone technological innovations and overhauls since its inception. Since November 2017, we have been engaged in the gradual closing down of the 160Ka pre-bake reduction pot-lines and, subsequently, the closing down of the 230Ka pre-bake reduction pot-lines. As of January 2018, the production in Guizhou branch had been fully shut down. In 2019, we disposed of the primary aluminum production facilities in Guizhou branch. Guizhou branch did not have any annual primary aluminum production capacity as of December 31, 2019 and did not produce any primary aluminum in 2019. It was mainly engaged in bauxite mining in 2019.

Chalco Mining

Chalco Mining was incorporated as one of our subsidiaries in the PRC in 2007 and is currently our wholly owned subsidiary. To optimize the allocation of our resources and further consolidate our operations, we transferred all of the assets and liabilities of our Henan branch to Chalco Mining in August 2017. Henan branch commenced its alumina refining operation in 1966 and primary aluminum smelting operation in 1967 (the latter of which was ceased in 2013) in Henan Province, a province rich in bauxite reserves. It was the first refinery in China to develop the Bayer-sintering combined process. Bauxite is delivered to Chalco Mining via railway and highway from our following mines: Xiaoguan mine, Gongyi mine and Dengfeng mine located in Zhengzhou, Luoyang mine in Luoyang, Mianchi mine in Mianchi, Xuchang mine in Zhengzhou, Sanmenxia mine in Sanmenxia and Jiaozuo mine in Jiaozuo. The alumina production line that we put into operation at Chalco Mining uses the ore-dressing Bayer process, which we developed to refine low alumina-to-silica ratio bauxite. Chalco Mining's production facilities have been substantially upgraded with equipment imported from Germany and Denmark. The refinery has also benefited from its access to high alumina-to-silica ratio bauxite from certain of our mines and through purchases on the market. Chalco Mining had an annual alumina production capacity of approximately 2,410,000 tonnes as of December 31, 2019. In 2019, Chalco Mining produced approximately 1,235,390 tonnes of alumina and 98,850 tonnes of chemical alumina products.

Chalco Shandong

Chalco Shandong was incorporated as one of our subsidiaries in the PRC in 2015 and is currently our wholly owned subsidiary. The predecessor of Chalco Shandong was our Shandong branch, which commenced operations in 1954. Chalco Shandong has the capacity to produce alumina and chemical alumina products. Bauxite is delivered to Chalco Shandong via railway and highway from the Yangquan mine in Yangquan, Shanxi Province. Its alumina refinery was China's first production facility for alumina. It produces its alumina through the Bayer-sintering process and the Bayer process. Through technology renovation, Chalco Shandong has the capacity to produce high-quality alumina products used for the production of refined aluminum and high-purity aluminum. Chalco Shandong purchases some bauxite from overseas and the rest from small third-party mines in Henan and Shanxi Provinces. Chalco Shandong had an annual alumina production capacity of approximately 2,270,000 tonnes as of December 31, 2019. It produced approximately 1,567,980 tonnes of alumina in 2019.

In addition, Chalco Shandong produces substantial amount of chemical alumina products. In 2019, it produced approximately 2,528,170 tonnes of chemical alumina products. It is the largest and most technologically advanced production facility for chemical alumina products in China with the ability to produce a wide variety of chemical alumina products.

Chalco Shandong had engaged in primary aluminum production before we suspended the operations of its primary aluminum production facilities in June 2013. In 2017, the disposal of Chalco Shandong's primary aluminum production facilities was completed. Chalco Shandong did not have any annual primary aluminum production capacity as of December 31, 2019 and did not produce any primary aluminum in 2019.

Qinghai Branch

Located in Qinghai Province, our Qinghai branch is a stand-alone primary aluminum production facility. This branch commenced operations in 1987 and is one of the most technologically advanced primary aluminum smelters in China. It operates 180Ka and 210Ka automated pre-bake anode reduction pot-lines that were developed domestically. In addition, our Qinghai branch also possesses production capacity of carbon cathodes and is able to manufacture carbon cathodes products. Our Qinghai branch benefits from relatively low electricity costs in Qinghai Province due to the hydroelectric power stations in the region. The Qinghai branch sources alumina from Shanxi New Material, Chalco Shandong, Chalco Mining and Zhongzhou Aluminum and incurs higher transportation costs for both raw materials and its primary aluminum products than our other branches.

Our Qinghai branch had an annual primary aluminum production capacity of approximately 420,000 tonnes as of December 31, 2019. It produced approximately 408,400 tonnes of primary aluminum in 2019.

Guizhou Huaren

Established in May 2017 and located in Qingzhen, Guizhou Province, Guizhou Huaren is a stand-alone primary aluminum production facility and commenced full operation in September 2018. Guizhou Huaren had an annual primary aluminum production capacity of approximately 400,000 tonnes as of December 31, 2019. It produced approximately 479,500 tonnes of primary aluminum products in 2019.

Shanxi Zhongrun

Established in November 2015 and located in Lvliang, Shanxi Province, Shanxi Zhongrun specializes in producing primary aluminum products. The first batch of electrolytic cells of Shanxi Zhongrun was put into operations in May 2018. Shanxi Zhongrun had an annual primary aluminum production capacity of approximately 432,000 tonnes as of December 31, 2019. It produced approximately 181,200 tonnes of primary aluminum products in 2019.

Zhongzhou Aluminum

Located in Henan Province, Zhongzhou Aluminum is a stand-alone alumina plant, located near abundant bauxite, coal and water supplies. Zhongzhou Aluminum was incorporated as one of our subsidiaries in the PRC in 2015 and is currently our wholly owned subsidiary. The predecessor of Zhongzhou Aluminum was our Zhongzhou branch. Zhongzhou Aluminum commenced operations in 1993 and is equipped with imported and self-developed technology and has undergone various improvements and upgrades, in particular to its Bayer-sintering process and Bayer process. Zhongzhou Aluminum obtains bauxite supplies partly from extractions of our mines, and partly from external suppliers in Henan and Shanxi Provinces and overseas.

Zhongzhou Aluminum had an annual alumina production capacity of approximately 3,050,000 tonnes as of December 31, 2019. Zhongzhou Aluminum produced approximately 2,132,760 tonnes of alumina and approximately 777,920 tonnes of chemical alumina products in 2019.

Chongqing Branch

Our Chongqing branch is located in Chongqing. Chongqing branch completed the construction of alumina production facilities in 2010 and its annual alumina production capacity was approximately 800,000 tonnes as of December 31, 2019. We have suspended production in Chongqing branch since July 2014 due to the relatively significant decrease in the price of alumina as compared with the price of alumina during the construction period, large negative variation of mineral resources and the high costs of natural gas and other energy at the time of suspension. In 2018, we entered into agreements with a third party to lease the alumina production facilities of Chongqing branch and to cooperate on mine operations, respectively. In 2019, we received RMB115 million for leasing alumina production facilities and RMB3.4 million for cooperation on mine operations, respectively.

Guizhou Huajin

Established in July 2014 and located in Qingzhen, Guizhou Province, Guizhou Huajin specializes in producing alumina products. Guizhou Huajin had an annual alumina production capacity of approximately 1,600,000 tonnes as of December 31, 2019. Guizhou Huajin produced approximately 1,612,880 tonnes of alumina products in 2019.

Shanxi Huaxing

Located in Shanxi Province, Shanxi Huaxing is a stand-alone alumina plant which commenced trial production in October 2013. Shanxi Huaxing obtains bauxite supplies from our own mines delivered primarily via highway and is located near abundant coal and water supplies.

In December 2015, we transferred out 50% of our equity interests in Shanxi Huaxing, a then wholly-owned subsidiary of our Company, through the Shanghai United Assets and Equity Exchange. In December 2018, we acquired the 50% equity interests in Shanxi Huaxing through the Shanghai United Assets and Equity Exchange from Baotou Transportation Investment Group Co., Ltd. Upon completion of the acquisition, Shanxi Huaxing became our wholly-owned subsidiary. Please see “- A. History and Development of the Company - Transfer of Equity Interest in Shanxi Huaxing” for more details about the transfer of equity interest.

Shanxi Huaxing had an annual alumina production capacity of approximately 2,000,000 tonnes as of December 31, 2019. Shanxi Huaxing produced approximately 1,256,340 tonnes of alumina products in 2019.

Lanzhou Aluminum

Located in Lanzhou city in Gansu Province, Lanzhou Aluminum is a stand-alone primary aluminum plant. In April 2007, we acquired a primary aluminum plant in Lanzhou, which was divided in to two parts in July 2007: our Lanzhou branch and Northwest Aluminum. In January 2019, we turned the Lanzhou branch into our wholly-owned subsidiary, Lanzhou Aluminum, in order to promote its business vitality. Lanzhou Aluminum owns a primary aluminum smelting plant with a designed annual primary aluminum production capacity of approximately 450,000 tonnes as of December 31, 2019. It produced approximately 408,500 tonnes of primary aluminum in 2019.

Shanxi New Material

Shanxi New Material is situated in Shanxi Province. In March 2003, we established the joint venture company, Shanxi Huaze, with Zhangze Electric Power to commence the construction of a primary aluminum production facility. In 2017, we contributed certain assets related to alumina production of our Shanxi branch to Shanxi Huaze. Upon completion of our asset contribution, our shareholding in Shanxi Huaze increased from 60% to 85.98% and Shanxi Huaze was renamed to Shanxi New Material. Shanxi New Material had an annual alumina production capacity of approximately 2,600,000 tonnes as of December 31, 2019 and produced approximately 1,771,020 tonnes of alumina and 94,620 tonnes of chemical alumina products in 2019. Its designed annual production capacity of primary aluminum was approximately 424,000 tonnes as of December 31, 2019 and it produced approximately 365,800 tonnes of primary aluminum in 2019. Please see “- A. History and Development of the Company - Merger and Reorganization of Shanxi Branch and Shanxi Huaze” for more details about the reorganization.

Shanxi Huasheng

Shanxi Huasheng is situated in Shanxi Province. In December 2005, we entered into a joint venture agreement with Shanxi Guan Lv Company Limited to establish a joint venture company, Shanxi Huasheng. Shanxi Huasheng commenced operations in March 2006. We currently hold 51% equity interest in Shanxi Huasheng. In 2019, Shanxi Huasheng produced approximately 60,900 tonnes of primary aluminum. In June 2019, Shanxi Huasheng transferred its primary aluminum capacity quota to Yixin Aluminum and no longer had any annual primary aluminum production capacity as of December 31, 2019. See “- A. History and Development of the Company - Transfer of Primary Aluminum Capacity Quota of Shanxi Huasheng” for details.

Zunyi Aluminum

Zunyi Aluminum is situated in Guizhou Province. In 2018, we merged Zunyi Alumina into Zunyi Aluminum. Upon the completion of the merger, our shareholding in Zunyi Aluminum increased from 62.1% to 67.445%. After the merger, Zunyi Aluminum had an annual alumina production capacity of approximately 1,000,000 tonnes as of December 31, 2019 and the aggregate production of Zunyi Aluminum was approximately 1,102,340 tonnes of alumina and 16,150 tonnes of chemical alumina products in 2019. Its post-merger designed annual production capacity of primary aluminum was approximately 375,000 tonnes as of December 31, 2019 and it produced approximately 404,500 tonnes of primary aluminum in 2019. Please see “- A. History and Development of the Company - Merger and Reorganization of Zunyi Alumina and Zunyi Aluminum” for more details about the merger.

Fushun Aluminum

Fushun Aluminum is situated in Liaoning Province, and was a stand-alone primary aluminum plant. In March 2006, we entered into a share transfer agreement with Liaoning Fushun Aluminum Plant to acquire 100% of the equity interests in Fushun Aluminum for a consideration of RMB500 million. Fushun Aluminum’s primary business was the production of primary aluminum and carbon products. We stopped production of primary aluminum in Fushun Aluminum in October 2015 due to the relatively significant decrease in the price of primary aluminum and high costs of electricity at that time. In 2018, we disposed of the primary aluminum production facilities in Fushun Aluminum. Fushun Aluminum did not have any annual primary aluminum production capacity as of December 31, 2019 and did not produce any primary aluminum in 2019.

Fushun Aluminum had an annual anode carbon production capacity of approximately 530,000 tonnes as of December 31, 2019 and it produced approximately 169,029 tonnes of baked carbon anodes in 2019.

Shandong Huayu

Shandong Huayu is situated in Shandong Province and is a stand-alone primary aluminum plant. We currently hold 55% equity interest in Shandong Huayu. Shandong Huayu had an annual primary aluminum production capacity of approximately 200,000 tonnes as of December 31, 2019. Since November 2018, we have gradually suspended production of aluminum at Shandong Huayu due to market environment and production restriction for environmental protection. In 2019, we halted its primary aluminum production and before that Shandong Huayu produced approximately 8,500 tonnes of primary aluminum in 2019. Shandong Huayu also has supporting facilities and coal-fired generators. We are considering the plan of transformation, upgrading and development of Shandong Huayu.

Gansu Hualu

Gansu Hualu is situated in Gansu Province, and is a stand-alone primary aluminum plant. In August 2006, we entered into a share transfer agreement with Baiyin Nonferrous Metal (Group) Co., Ltd. (“Baiyin Nonferrous”) and Baiyin Ibis Aluminum Co., Ltd. (“Baiyin Ibis”). Baiyin Nonferrous contributed 127,000 tonnes of primary aluminum smelting and supporting facilities owned by Baiyin Ibis as capital contribution and holds a 49% equity interest in Gansu Hualu. We hold a 51% equity interest in Gansu Hualu. Since November 2015, the production of primary aluminum has been suspended. In 2019, most of the primary aluminum production facilities in Gansu Hualu has been disposed and the rest is expected to be disposed in the first half of 2020. Gansu Hualu had no annual primary aluminum production capacity as of December 31, 2019 and did not produce any primary aluminum in 2019.

In addition, Gansu Hualu also possesses production capacity of carbon products. Its designed annual production capacity of anode carbon products was approximately 150,000 tonnes as of December 31, 2019 and it produced approximately 27,318 tonnes of anode carbon products in 2019.

Baotou Aluminum

Baotou Aluminum is located in the Inner Mongolia Autonomous Region, and is a stand-alone primary aluminum plant. On December 28, 2007, through A Shares issuance and exchange for Baotou Aluminum shares, we acquired 100% of the equity interest of Baotou Aluminum. Baotou Aluminum is currently our wholly owned subsidiary. In April 2015, Baotou Aluminum and Baotou Transportation Investment Group Co., Ltd. established Inner Mongolia Huayun. Inner Mongolia Huayun commenced operations in 2017. Together with the primary aluminum production facilities at Inner Mongolia Huayun, Baotou Aluminum had a consolidated annual primary aluminum production capacity of approximately 1,340,000 tonnes as of December 31, 2019 and a consolidated output of approximately 1,315,300 tonnes of primary aluminum in 2019.

Liancheng Branch

Liancheng branch is located in Gansu Province. In late May 2008, we acquired 100% of the equity interest in Liancheng Longxing Aluminum Company Limited from Chinalco on the China Beijing Equity Exchange and subsequently turned it into our Liancheng branch which specializes in producing primary aluminum. We have implemented flexible production arrangement for certain primary aluminum production facilities in Liancheng branch since November 2018 as a result of high electricity costs. Liancheng branch had an annual primary aluminum production capacity of approximately 550,000 tonnes as of December 31, 2019. It produced approximately 155,200 tonnes of primary aluminum in 2019.

Ningxia Energy

Ningxia Energy is an integrated power generation company with coal mines located in Ningxia Autonomous Region. Its principal business includes conventional coal-fire power generation and renewable energy generation. Ningxia Energy was established in June 2003. In January 2013, we acquired an aggregate of 70.82% of the equity interest in Ningxia Energy. Ningxia Energy had a total installed capacity of 4,249.13 MW as of December 31, 2019. It also operates coal mines located in the Ningxia Autonomous Region. Please see “- D. Property, Plants and Equipment - Mines - Coal Mines.” Its principal business includes conventional coal-fire power generation and renewable energy generation. In 2019, Ningxia Energy produced approximately 10.8 million tonnes of coal and approximately 15.8 billion kWh of electricity.

Zhengzhou Institute

The Zhengzhou Institute, located in Zhengzhou, Henan Province, was incorporated as our subsidiaries in 2015. Its predecessor was established in August 1965 and has served as the center for our research and development efforts. The Zhengzhou Institute specializes in the research and development of technologies for primary aluminum smelting, alumina refining and the development of new products of chemical alumina. Zhengzhou Institute is the only professional research institute in China dedicated to the research and development of aluminum smelting technologies and has played a key role in bringing about technological innovations in China's aluminum industry. The Zhengzhou Institute was approved by the Ministry of Science and Technology of the PRC in 2003 to establish the National Research Center of Aluminum Refinery Technologies and Engineering. As of December 31, 2019, the Zhengzhou Institute had a limited production capacity for chemical alumina products, which it uses in connection with its research and development efforts.

Xinghua Technology

We acquired a 66% equity interest in Xinghua Technology in December 2016. Located at Shanxi Province, Xinghua Technology is an alumina plant with an annual alumina production capacity of approximately 900,000 tonnes as of December 31, 2019. It produced approximately 664,750 tonnes of alumina and approximately 88,000 tonnes of chemical alumina in 2019.

Competition

Competition from Domestic Competitors

Alumina

In 2019, we supplied approximately 48% of our total production of alumina to our own smelters and sold substantially all of the remaining self-produced alumina to our domestic customers. Our competitors mainly include other domestic and international alumina producers that conduct sales in China. In 2019, our alumina production (with chemical alumina products included) represented approximately 21.9% of total domestic production in China.

We are a leading enterprise in non-ferrous metal industry in China. As of December 31, 2019, 18 alumina producers in China (including Chalco) each had annual production capacity of 500,000 tonnes or above, which collectively represented approximately 92.65% of the total alumina production capacity in China. As of the same date, among these 18 alumina producers, 14 alumina producers (including Chalco) each had annual production capacity of one million tonnes or above, which collectively represented approximately 89.45% of the total alumina production capacity in China. In order to improve the efficiency and competitiveness of the Chinese alumina industry as well as to protect the environment, MIIT published the Standard Conditions for Aluminum Industry in July 2013 and issued a new version in March 2020, which provides stringent standards for the existing alumina enterprises. Although we face competition from other domestic and international refineries, we have several advantages over such competitors, including:

- we have access to a substantial and stable supply of bauxite;
- we are experienced in alumina production and our production technologies are specifically adapted to the particular chemical composition of bauxite found in China;
- we have strong capabilities in technology research and hold certain proprietary technologies and patents; and
- we have a substantial workforce that has extensive experience in production and management.

Primary Aluminum

We derived all of our primary aluminum revenues from domestic sales in 2019. Our competitors include other domestic and international primary aluminum producers that conduct sales in China. In 2019, our primary aluminum production represented approximately 10.5% of total domestic production in China.

We are a leading enterprise in non-ferrous metal industry in China. As of December 31, 2019, 18 primary aluminum producers in China (including Chalco) each had annual production capacity of 500,000 tonnes or above, which collectively represented approximately 84.95% of the total primary aluminum production capacity in China. As of the same date, among these 18 primary aluminum producers, 12 primary aluminum producers (including Chalco) each had annual production capacity of one million tonnes or above, which collectively represented approximately 73.25% of the total primary aluminum production capacity in China. The PRC government encourages consolidation in the Chinese primary aluminum industry to create larger, more efficient producers that are better positioned to implement measures to reduce emissions. Moreover, according to the current Standard Conditions for Aluminum Industry and other administrative regulations, aluminum smelting enterprises must ensure the availability of resources, energy and water resources, and are encouraged to merge with hydropower, coal power and other power enterprises through reorganization. In addition, pursuant to relevant PRC regulations, the construction of new primary aluminum projects and the reconstruction or expansion of existing primary aluminum projects would be approved only if such projects would introduce new primary aluminum production capacity in an amount equal to or smaller than the amount of existing production capacity to be replaced.

Although we face competition from other domestic and international smelters, we have several advantages over such competitors, including:

- **Scale of production.** With eleven primary aluminum smelters, we can achieve significant economies of scale. In addition, our scale of production enables us to achieve high production volumes to fill large customer orders and maintain a large customer base. Through our national distribution network, we are able to make timely deliveries to customers from our local warehouses.
- **Technology.** We believe we have a more sophisticated technological innovation system and stronger innovation capability than most of our domestic competitors. The FHESST technology developed and employed by us is currently the most advanced energy saving technology in primary aluminum smelting in China. In addition, in terms of technological support and research and development capabilities, we are equipped with the most advanced research and development institute within the aluminum industry in China and enjoy advantages over other domestic smelters in technology advancement.

- Vertical integration. As a leading integrated alumina and primary aluminum producer in China, we are able to supply alumina internally to our primary aluminum plants. As a result, we save on transportation, warehousing and related costs. In addition, because we operate our own alumina refineries, we are able to assure a stable supply of alumina for our primary aluminum smelting operations.
- Quality. We have maintained and will continue to improve on the high quality standards for our primary aluminum which has satisfied national and industrial standards and customers' need.

The primary aluminum produced by most of our smelters satisfies the quality standards of the LME.

Competition from International Competitors

The tariff rate for alumina and primary aluminum imports was eliminated on January 1, 2008 and August 1, 2007, respectively. In 2019, China had net import of approximately 1.37 million tonnes of alumina (with chemical alumina products included), compared to a net export of 0.95 million tonnes in 2018, primarily due to the recovery of production of a major player in the overseas alumina market. China had a net export of approximately 811 tonnes of primary aluminum in 2019, compared to a net import of approximately 69,600 tonnes of primary aluminum in 2018.

We expect to continue to face competition from international suppliers of alumina and primary aluminum which are large international companies. Some competitors may also consider establishing joint venture companies with local producers in China to gain access to the resources in China and to lower transportation costs. However, we expect we will continue to benefit from certain PRC governmental policies that promote large domestic aluminum enterprises.

Research and Development

Our research and development efforts over the years have facilitated the expansion of our production capacity and reduced our unit costs. We have successfully commercialized our previous research and development results in various technologies. In 2019, we completed 82 technological projects, including 69 research and development projects undertaken independently by our branches or subsidiaries, ten special key science and technology projects and three science and technology application projects. In addition, we filed a total of 248 patent applications in 2019.

As of December 31, 2019, we owned 1,300 patents, which were primarily related to technologies and processes, equipment and new products. Once granted, a patent in China for an invention is valid for 20 years and for a utility model or a design 10 years from the date of the patent application. As of December 31, 2019, we owned 25 trademarks, each of which had a term of 10 years.

We do not regard any single patent, license, or trademark to be material to our sales and operations as a whole. We are not involved in any material intellectual property disputes.

Environmental Protection

Our operations are subject to PRC national and local environmental laws and regulations, including laws and regulations governing waste discharge, waste generation, treatment and disposal of hazardous materials, land reclamation, pollutant emissions and environmental issues associated with mining.

The pollutants discharged from our alumina refining process include red mud, waste water and gas emissions and particulates. Our primary aluminum production process generates fluorides, pitch fume and particulates. It is illegal to release these pollutants untreated. The discharge of these pollutants after treatment must comply with national and local discharge limits.

Each of our alumina refineries, primary aluminum smelters and other production plants has its own waste treatment facilities onsite or has developed other methods to dispose of industrial waste in compliance with applicable environmental laws and regulations. We were granted ISO14001 accreditations issued by China Quality Certification Center and the International Certification Network in 2004. In 2019, we passed the annual review and these accreditations were renewed.

We have increased our energy-efficiency by implementing new production techniques and technologies, upgrading our production facilities, optimizing our production process and enhancing our logistics and operations management. We have incorporated clean technology and processes into our operations with a view to promoting the concept of “zero discharge” plants. In 2019, the discharge of all industrial waste water in the course of our alumina and primary aluminum production met the standards under relevant regulations.

In addition, we have focused on sustainable development of mine sites and achieved significant progress in mine reclamation. We reclaimed 12,000 mu of land throughout the year of 2019 and had reclaimed an aggregate amount of 78,500 mu of land as of December 31, 2019, representing a cumulative reclamation rate of over 86%.

Our total expenditures for maintaining compliance with environmental laws and regulations were RMB691.9 million, RMB777.6 million and RMB914.4 million for 2017, 2018 and 2019, respectively. In 2019, we did not have any major environmental pollution incidents.

Insurance

We maintain insurance coverage for our fixed assets such as plant, machinery, equipment, office facilities and transportation vehicles against accidents or natural disasters such as typhoons, hurricanes, floods, landslides and lightning strikes. However, there are certain types of losses, such as losses from war, acts of terrorism and nuclear radiation, for which we cannot obtain insurance at a reasonable cost or at all.

We are covered under the work-related injury insurance required by the relevant local government labor departments, and we have procured additional business accidental insurance for our employees. More extensive insurance is either unavailable in China or would impose a cost on our operations that would reduce our competitiveness.

Our insurance premiums were RMB44.1 million, RMB49.6 million and RMB42.9 million in 2017, 2018 and 2019, respectively.

Seasonality

Our business in general is not subject to seasonality. Separately, our bauxite output in Boffa bauxite mine may be subject to seasonal fluctuations due to the rainy season in Guinea.

Cyber Security

With respect to our internal internet policies on cyber-security, we have established an information safety management system and issued internal regulations on cyber-security, internal hardware and data safety systems and we are gradually implementing measures relating to the office environment information safety management, information system access control, protection from any malicious software, and internal review and audit of information safety risks, in order to prevent loss of information due to cyber-security incidents, network outages or hardware incidents. In 2019, we did not experience any material cyber-security incidents or related losses.

Regulatory Overview

Producers of alumina and primary aluminum are subject to national industrial policies and relevant laws and regulations in areas of environmental protection, import and export, land use, foreign investment regulation and taxation. We are also subject to regulations relating to activities such as mining.

We are principally subject to governmental supervision and regulation by four agencies of the PRC government:

- the NDRC, which sets and implements the major policies concerning China's economic and social development, approves investments exceeding certain amounts, coordinates and improves the reform of the economic system;
- the Ministry of Natural Resources of China, which has the authority to grant land use rights and mining right permits;
- the MIIT, which formulates industrial policies and investment guidelines for all industries including the aluminum industry; and
- the CSRC, the securities regulatory commission of China.

The following is a brief summary of the principal laws, regulations, policies and administrative directives to which we are subject.

Requirements for Capital Investments

Any capital markets financing activities by an enterprise or company incorporated in the PRC such as those to finance capital projects, are subject to approval by the CSRC and/or other relevant authorities in China, regardless of whether the funds are raised in China or on the international capital markets. An issuer incorporated in the PRC must obtain prior approval from the CSRC for issuance of equity securities or equity-linked securities. Offering of corporate bonds in the PRC is also subject to supervision of the CSRC. Offering of bonds by a PRC-incorporated company outside the PRC shall be filed with NDRC. For all overseas financing activities by an enterprise or company incorporated in the PRC, the issuer must register with and obtain prior approval from the administrative authorities of foreign exchange. Foreign investment in the exploring and mining of alumina and primary aluminum is permitted by the PRC government.

Standard Conditions for Aluminum Industry

The Standard Conditions for Aluminum Industry was issued by MIIT in July 18, 2013 and a new version was issued on March 3, 2020 to replace the 2013 version. The new Standard Conditions for Aluminum Industry only applies to existing bauxite mining, alumina and primary aluminum enterprises and indicates that such standards do not constitute administrative approval or mandatory requirement. It provides that bauxite mining, alumina and primary aluminum production must comply with the state and local industry policies and overall plans on the mining resources and development of aluminum industry, as well as laws, regulations and policies related to the environmental protection, energy conservation, mining and production safety. According to the new Standard Conditions for Aluminum Industry, aluminum smelting enterprises must ensure the availability of resources, energy and water resources, and are encouraged to merge with hydropower, coal power and other power enterprises through reorganization. It further encourages that alumina enterprises use intelligent systems and equipment in its operation to achieve energy-conserving and environment-protective purpose. The new Standard Conditions for Aluminum Industry further set out guidelines and standards for enterprises in aluminum industry regarding product quality, facilities, energy consumption, resources consumption, environmental protection, production safety and occupational diseases prevention.

Under the Standard Conditions for Aluminum Industry, the MIIT shall, in accordance with the applicable regulatory standards, review the applicants and disclose the names of applicants that meet the regulatory conditions. The MIIT promulgated on April 4, 2014, January 4, 2015 and February 14, 2016, respectively, the first, the second and the third lists of enterprises that meet the Standard Conditions for Aluminum Industry. Most of our production branches and subsidiaries have met the Standard Conditions for Aluminum Industry of 2013 version and are included on these lists. According to the current Standard Conditions for Aluminum Industry, enterprises that would like to be named in the list under this new Standard Conditions for Aluminum Industry need to resubmit application for the MIIT's review.

Pricing

The PRC government does not impose any limitations with respect to the pricing of alumina, primary aluminum and related products. Thus, alumina and primary aluminum producers are free to set prices for their products. All the raw materials, supplemental materials and other supplies that we purchase are based on market prices. Freight transportation on the national railway system is subject to government mandated pricing.

Electricity Supply and Price

The State Electricity Regulatory Commission of China is responsible for the supervision and administration of the power industry in China. The NDRC and local governments regulate electricity pricing.

The Electric Power Law of China and related rules and regulations govern construction, generation, supply and consumption of electric power. Currently, China's state-owned power companies, through their respective local subsidiaries, operate all the regional power grids in China from which we obtain a part of our electricity requirements. In October 2007, PRC government issued "Notice on Further Solutions of the Difference in Electricity Rates," according to which the preferential electricity prices originally enjoyed by Chinese primary aluminum enterprises have been gradually abolished. In December 2007, PRC government issued "Notice of Eliminating Preferential Electricity Rate for High Energy Consuming Enterprises and Related Matters," which further eliminated the preferential electricity price arrangement enjoyed by Chinese primary aluminum enterprises. In December 2013, the NDRC and MIIT issued the "Circular on the Policies for Tiered Pricing of Electricity Used by Electrolytic Aluminum Enterprises" (the "Electricity Tiered Pricing Circular"), which became effective on January 1, 2014, to impose tiers of electricity prices on primary aluminum smelters. Specifically, if the alternating current consumed by any smelter is more than 13,700 kWh per tonne of molten aluminum but less than 13,800 kWh per tonne of molten aluminum, such smelter must pay additional RMB0.02 per kWh for the electricity used. If the alternating current consumed by any smelter is more than 13,800 kWh per tonne of molten aluminum, such smelter must pay additional RMB0.08 for per kWh for the electricity used.

In March 2015, new policies and reforms relating to electricity generation, retail, usage, and other related sectors were introduced. Under "Several Opinions of the CPC Central Committee and the State Council on Further Deepening the Reform of the Electric Power System," a series of reforms relating to electricity pricing, distribution and retail segments, electricity trading, distributed generation, and other aspects has been put forward. In November 2015, NDRC and the National Energy Administration of the PRC jointly issued further supplemental measures, including "Implementation Opinions on Promoting Transmission-Distribution Price Reform," "Implementation Opinions on Promoting Power Market Construction," "Implementation Opinions on Establishing Power Trading Institutions and Their Normative Operation," "Implementation Opinions on Orderly Releasing Plans of Power Generation and Power Utilization," "Implementation Opinions on Promoting Power-Sales Side Reform," and "Guidance Opinions on Reinforcing and Regulating Supervision and Management of Coal-Fired Self-Generation Power Plants," which set out further requirements and implementation steps in relation to the reform of electric power system. Towards the end of 2016, NDRC promulgated "Measures of Electricity Pricing for Transmission-Distribution Grid at the Provincial Level," which established a regulatory framework of electricity transmission and distribution pricing.

Regulations Concerning Imports and Exports of Alumina and Primary Aluminum

Import taxes on alumina and primary aluminum have been eliminated. The export tariff on certain primary aluminum products has been 15% since August 1, 2007.

Environmental Protection Laws and Regulations

The Ministry of Ecology and Environment of China is responsible for supervision and administration of environmental protection in China. It formulates national environmental quality and discharge standards and monitors China's environmental system. Bureau of Ecology and Environment at the municipal level or above are responsible for environmental protection within their respective jurisdictions.

Environmental regulations require each enterprise to file an environmental impact report with the relevant Bureau of Ecology and Environment for approval before undertaking the construction of a new production facility or any major expansion or renovation of an existing production facility. New facilities built pursuant to this approval are not permitted to operate until the relevant environmental bureau has performed an inspection and concluded that the facilities are in compliance with environmental standards.

The Environmental Protection Law requires any facility that produces pollutants or other hazards to incorporate environmental protection measures in its operations and establish an environmental protection responsibility system. Such system includes adoption of effective measures to control and properly dispose of waste gases, waste water, waste residue, dust or other waste materials. Any entity that discharges pollution must register with the relevant environmental protection authority. In 2016, Circular of the General Office of the State Council on the Implementing Plan for the Permit System for Controlling the Discharge of Pollutants was issued, pursuant to which enterprises that discharge pollutants need to obtain permits from relevant environment authority.

Penalties for breaches of the Environmental Protection Law include warning, payment of damages and imposition of fines. Any entity undertaking a construction project that fails to install pollution prevention and control facilities in compliance with environmental standards for a construction project may be ordered to suspend production or operations or to cease operations and may be fined. Criminal liability may be imposed for a material violation of environmental laws and regulations that causes any significant loss of property or personal injuries or death.

On December 25, 2016, the PRC government promulgated the Environmental Protection Tax Law, which became effective from January 1, 2018 and was amended on October 26, 2018. The Environmental Protection Tax Law imposes environmental protection tax to enterprises, entities, producers or operators which discharge taxable pollutants into air, water or lands. Taxable pollutants include air pollutants, water pollutants, solid wastes and noises. The environmental protection tax is collected by tax authority and levied in accordance with a table attached to the Environmental Protection Tax Law. However, emission of taxable pollutants into the centralized sewage and domestic waste treatment facilities, or storage or disposal of solid wastes in facilities or places that meet the national or local environmental protection standard, by enterprises, entities, producers or operators, is not deemed as direct emission of pollutants into the environment and is exempted from the environmental protection tax for such pollutants.

Mineral Resources Laws and Regulations

All mineral resources in China are owned by the state under the current Mineral Resources Law. Exploration, exploitation and mining operations must comply with the relevant provisions of the Mineral Resources Law and are under the supervision of the Ministry of Natural Resources. Exploration and exploitation of mineral resources are also subject to examination and approval by the Ministry of Natural Resources or relevant local authorities. Upon approval, the relevant administrative authorities, which are responsible for supervision and inspection of mining exploitation in their jurisdiction, will issue an exploration permit or mining permit. The holders of mining rights are required to file with the relevant administrative authorities annually.

The PRC government permits mine operators of collectively owned mines to exploit mineral resources in designated areas and individuals to mine scattered mineral resources. Such mine operators and individuals are subject to government regulation. Mining activities by individuals are restricted. Individuals are not permitted to exploit mineral reserves allocated for exploitation by a mining enterprise or company, or specified minerals prescribed by the state for protective mining. Indiscriminate mining that damages mineral resources is prohibited.

If mining activities result in damage to arable land, grassland or afforested area, the mining operator must take measures to return the land to an arable state within the prescribed time frame. Any entity or individual which fails to fulfil its remediation obligations may be fined and denied application for land use rights for new land by the relevant land and natural resources authorities.

It is unlawful for an entity or individual to conduct mining operations in areas designated for other legal mining operators. A mining operator whose exploitation causes harm to others in terms of production or in terms of living standards is liable for compensation and is required to take necessary remedial measures. When a mine is closed, a mine closure report and information concerning the mining facilities, hidden dangers, remediation and environmental protection must be submitted for examination and approval in accordance with the relevant PRC law and regulations.

Mineral products that have been illegally extracted and the related income derived from such activities may be confiscated and may result in fines, revocation of the mining permit and, in serious circumstances, criminal liability.

Energy Conservation Law

The amended Energy Conservation Law came into effect on October 26, 2018. It sets out the general principles for reducing energy waste and improving efficiency of energy consumption. It urges the adjustment of industry structure and replacement of high energy consumption projects with new energy or renewable energy resources. It provides that an energy conservation assessment and review system shall apply to newly investment projects and where a project does not meet the mandatory energy conservation standards, the project cannot be constructed. If a project that does not meet the mandatory energy conservation standards has been completed, it cannot be put into use.

In March 2014, the MIIT issued a regulation, the “Opinion on Implementing Supervision of Industrial Energy Conservation,” which lists the primary aluminum smelting as one of the high energy consumption operations that will be strictly monitored. In December 2014, the MIIT issued the Guidance for National Industrial Efficiency, which sets forth industrial efficiency standards for producers of major products in industries that involve high energy consumption, which included primary aluminum and alumina products.

Regulations Concerning Electrolytic Aluminum Industry

In June 2016, the General Office of the State Council promulgated “Guiding Opinions on Creating a Favorable Market Environment and Promoting the Non-Ferrous Metals Industry to Adjust Structure, Advance Transformation and Increase Efficiency,” under which the construction of new electrolytic aluminum projects and the reconstruction or expansion of existing electrolytic aluminum projects would be approved only if such construction, reconstruction or expansion would introduce new electrolytic aluminum production capacity in an amount equal to or smaller than the amount of existing electrolytic aluminum production capacity to be replaced by such construction, reconstruction or expansion.

In April 2017, NDRC, MIIT, the Ministry of Land and Resources (now known as Ministry of Natural Resources) and the Ministry of Environmental Protection (now known as Ministry of Ecology and Environment) jointly issued the “Notice Regarding the Plan on Special Action for Clean-up and Rectification of Projects in Violation of Laws and Regulations in the Electrolytic Aluminum Industry,” which sets forth a comprehensive plan to inspect electrolytic aluminum projects and rectify violations of applicable laws or regulations revealed in the inspection.

On January 1, 2018, MITT issued the “Notice Regarding Electrolytic Aluminum Enterprises to Realize Capacity Replacement by Acquisition, Merger and Restructure,” which requires electrolytic aluminum enterprises to achieve capacity replacement by acquisition, merger or capacity transferring and exchange of capacity quotas with its group companies.

Tax Laws and Regulation

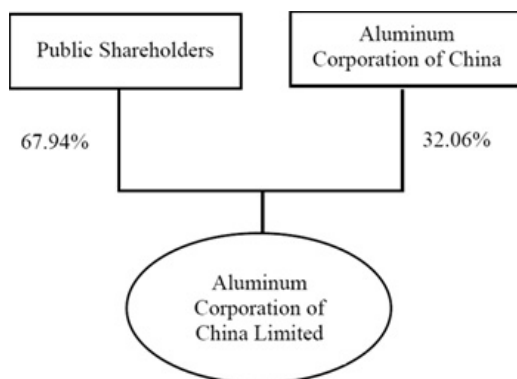
In March 2007, the PRC government promulgated the Enterprise Income Tax Law which became effective from January 1, 2008. The Enterprise Income Tax Law imposes a single income tax rate of 25% on both domestic and foreign invested enterprises. Pursuant to the Enterprise Income Tax Law, important high- and new-tech enterprises that are necessary to be supported by the state are subject to a reduced enterprise income tax rate of 15%. Certain branches and subsidiaries of us were granted tax concessions including preferential tax rates of 15%. On December 6, 2007, PRC government promulgated the Enterprise Income Tax Law Implementation Rules which also became effective on January 1, 2008.

In March 2016, the MOF and the SAT jointly promulgated “Circular on Comprehensively Promoting the Pilot Program of the Collection of Value-added Tax in Lieu of Business Tax,” pursuant to which we are allowed to deduct input tax from output tax according to the amount set forth in the special value-added tax invoices obtained from our purchases of services, intangible assets or real estate. On April 4, 2018, the MOF and the SAT issued the Circular on Adjusting Value-added Tax Rates, which became effective on May 1, 2018. Pursuant to this circular, for sale or import of goods, the previous applicable value-added tax rate 17% and 11% were adjusted to 16% and 10% respectively.

On March 20, 2019, the MOF, the SAT and the General Administration of Customs jointly issued the Announcement on Policies for Deepening Reform of Value-added Tax, which became effective on April 1, 2019. Pursuant to this announcement, for sales or import of goods by a general taxpayer that were previously subject to value added tax at the rate of 16%, the applicable tax rate has been adjusted to 13%, and for those previously subject to value added tax at the rate of 10%, the applicable tax rate has been adjusted to 9%.

C. Organizational Structure

Set out below is a chart illustrating our corporate structure as of March 31, 2020:



Below sets forth further information of our principal subsidiaries as of December 31, 2019:

Company	Percentage of ownership interest attributable to the Company	Principal activities
Baotou Aluminum Co., Ltd.	100.00%	Manufacture and distribution of primary aluminum, aluminum alloy and related fabricated products and carbon products
Chalco Hong Kong Ltd. ⁽¹⁾	100.00%	Overseas investments and alumina import and export activities
China Aluminum International Trading Co., Ltd.	100.00%	Trading, import and export activities
Chalco Mining Co., Ltd.	100.00%	Manufacture, acquisition and distribution of bauxite mines, limestone ore, manufacturing and distribution of alumina
Chinalco Shanxi Jiaokou Xinghua Technology Ltd. ⁽²⁾	66.00%	Manufacture and distribution of alumina
Chalco Shanghai Company Limited	100.00%	Trading and engineering project management
Chalco Shanxi New Material Co., Ltd.	85.98%	Manufacture and distribution of alumina, primary aluminum and anode carbon products and electricity generation and supply
Zunyi Aluminum Co., Ltd.	67.445%	Manufacture and distribution of primary aluminum and alumina
Chalco Energy Co., Ltd.	100.00%	Thermoelectric supply and investment management

Company	Percentage of ownership interest attributable to the Company	Principal activities
China Aluminum Ningxia Energy Group Co., Ltd.	70.82%	Thermal power, wind power and solar power generation, coal mining, and power related equipment manufacturing
Guizhou Huajin Aluminum Co., Ltd.	60.00%	Manufacture and distribution of alumina
Chalco Zhengzhou Research Institute of Non-ferrous Metal Co., Ltd.	100.00%	Research and development services
Chalco Shandong Co., Ltd.	100.00%	Manufacture and distribution of alumina
Chalco Zhongzhou Aluminum Co., Ltd.	100.00%	Manufacture and distribution of alumina
Chalco Logistics Group Co., Ltd.	100.00%	Logistic transportation
Shanxi Huaxing Aluminum Co., Ltd. ⁽³⁾	100.00%	Manufacture and distribution of alumina
Shanxi China Huarun Co., Ltd.	43.39%	Manufacture and distribution of primary aluminum
Guizhou Huaren New Material Co., Ltd.	40.00%	Manufacture and distribution of primary aluminum
China Aluminum International Trading Group Co., Ltd.	100.00%	Trading, importing and exporting of non-ferrous metal products
Chalco Materials Co., Ltd.	100.00%	Procurement of materials including raw materials and fuels

- (1) Chalco Hong Kong Ltd. is incorporated in Hong Kong. All other principal subsidiaries are incorporated in the PRC.
(2) We directly hold 33% shares and indirectly hold 33% shares, through Chalco Shandong Co., Ltd.
(3) We directly hold 60% shares and indirectly hold 40% shares, through Chalco Hong Kong Ltd.

D. Property, Plants and Equipment

Mines

Bauxite Mines

The following map sets forth details of the area surrounding our largest bauxite mine in China, the Pingguo mine:



The Guangxi Pingguo plant, located in the Guangxi Zhuang Autonomous Region, commenced operations in 1994. The surrounding infrastructure includes roadways and waterways.

Modernization and Physical Condition, Equipment, Infrastructure and Other Facilities

We have modern facilities at our mines in China, which were designed by professional PRC mine design institutes and adhere to international standards. Our mines are either open pit or underground. Our mines generally have mining offices and transportation facilities that have access to local roads and highways. In addition, we utilize advanced heavy equipment such as bulldozers and scrapers.

Source of Power and Water

All of our mining facilities in China are connected to the local or regional electric power grids. In addition, our mining facilities are connected to reliable water sources, all of which were sufficient for the requirements of each individual mine.

Our mines in Indonesia have access to local roads. Prior to suspension of productions, the two mines that used to be put into operation were powered by diesel fuel and are equipped with washing machines.

Coal Mines

We acquired 70% of the equity interest in Gansu Huayang in March 2011, which holds exploration rights for a portion of Luochuan mine in Gansu Province. We renewed the exploration permit in March 2019, which will expire in October 2020. We are in the process of applying for the exploration permit for the rest of Luochuan mine. Luochuan mine is an underground mine. We have completed the exploration but have not commenced development of Luochuan mine. As of the date of this annual report, neither proven nor probable reserves have been established in accordance with Industry Guide 7.

We acquired the mining rights for Laodonghe mine, in January 2013 through Chalco Guizhou Mining Co., Ltd. We hold 80.0% of the equity interest of Laodonghe mine in Guizhou Province. The mining permit expired in December 2018. We had completed the exploration of Laodonghe mine and have been actively coordinating follow-up matters with relevant parties. Laodonghe mine is an underground mine. As of the date of this annual report, neither proven nor probable reserves have been established in accordance with Industry Guide 7.

We completed the acquisition of 70.82% of the equity interest in Ningxia Energy in January 2013, which holds mining rights or exploration rights for certain coal deposits in Ningxia Autonomous Region. The coal mines owned and operated by Ningxia Energy include Wangwa mine, Wangwa No.2 mine, Yindonggou mine and Yinxingyijing mine, all of which are underground thermal coal mines. The operations at these coal mines are powered by electricity from local power grids and are accessible by public roads. As of the date of this annual report, neither proven nor probable reserves have been established in accordance with Industry Guide 7.

Wangwa mine, Wangwa No. 2 mine and Yindonggou mine are currently in extraction stage. We primarily use comprehensive mechanized longwall mining method to extract coal from Wangwa mine, Wangwa No. 2 mine and Yindonggou mine and we use advanced coal mining equipment including hydraulic roof supports and shearers. In addition, Ningxia Energy holds 50% of interest in Yinxingyijing mine while the other joint owner in Yinxingyijing mine does not participate in its operation. Yinxingyijing mine has been put into operation since January 2019. The exploration permit of Yinxingyijing mine expired in August 2018 and has been cancelled since then. We obtained the mining permit in February 2018, which will expire in February 2048.

The following table sets forth detailed information on Wangwa mine, Wangwa No. 2 mine and Yindonggou mine:

Nature of Ownership	Wangwa mine	Wangwa No. 2 mine	Yindonggou mine
	Owned and operated by Ningxia Energy, a 70.82% subsidiary of Chalco	Owned and operated by Ningxia Energy, a 70.82% subsidiary of Chalco	Owned and operated by Ningxia Energy, a 70.82% subsidiary of Chalco
Commencement of construction	1984 ⁽¹⁾	2007	2010
Commencement of extraction	1990 ⁽¹⁾	2010	2016
Permit renewal	November 2046	June 2032	July 2036
Mining recovery rate (%) ⁽²⁾	78	81	76
Depth of mine (<i>meters underground</i>)	400	400	478
Average thickness of main coal seam (<i>meters</i>)	6-11	8-10	2-8
Calorific value (<i>Kcal/kg</i>)	4,900-5,100	4,800-5,000	4,600-4,900
Sulphur content (%)	1.1	1.2	1.12
Average ash content (%)	14.2	15.3	12.2

(1) The capacity expansion and technology upgrade of Wangwa mine is currently at the final acceptance stage of the construction process.

(2) The mining recovery rate is the rate of the amount of coal recovered from a determined amount of reserves, which is calculated by dividing the actual volume of coal recovered in a year by the volume of reserves mined and consumed in the same year.

For the year ended December 31, 2019, Ningxia Energy incurred capital expenditures of approximately RMB1.6 billion on infrastructure construction.

Land

Chinalco leases to us 411 pieces or parcels of land, located in eight provinces, covering an aggregate area of approximately 52.89 million square meters for any purpose related to our operations and businesses. Currently, all leases for our properties are valid and have not expired. The leased land mainly consists of:

- 399 pieces of allocated land with an area of approximately 51.59 million square meters. Chinalco has obtained authorization from the relevant administrative authorities to manage and lease the land use rights for such land; and
- 12 pieces of land with an area of approximately 1.30 million square meters. Chinalco has paid the land premiums and obtained land use rights certificates.

The land is leased for the following terms:

- allocated land: 50 years commencing from July 1, 2001 (except for land use rights of mines operated by us, whose leased terms shall end on the expiration date of the mining rights or at the end of the actual mine life, whichever is earlier);
- granted land: until expiration of the relevant land use right permits; and
- for both allocated or granted land: normal commercial terms that stipulate, among other conditions, the terms of use, monthly or annual rental amounts payable in Renminbi and a six-month notification provision for termination of any lease agreement.

Buildings

Our principal executive offices, which we lease from Chinalco, are located at No. 62 North Xizhimen Street, Haidian District, Beijing, People's Republic of China, 100082.

Pursuant to the reorganization in connection with our initial public offering in 2001, Chinalco transferred to us, among other operating assets, ownership of the buildings and properties for the operation of our core businesses. Chinalco retained its remaining buildings and properties for its operations. The buildings transferred to us comprise 4,631 buildings with an aggregate gross area of approximately 4.2 million square meters. These buildings may be sold or transferred only with the consent of Chinalco and in accordance with applicable land transfer procedures. Chinalco has undertaken to provide its consent and the necessary assistance to affect land grant procedures to ensure that our buildings can be legally transferred or sold.

We and Chinalco also lease to each other a number of other buildings and properties for ancillary uses, which comprise mainly buildings for offices, dormitory, canteen and storage purposes. As of the date of this annual report, we leased 133 buildings to Chinalco, with an aggregate gross area of approximately 134,186 square meters, while Chinalco leased 119 buildings to us, with an aggregate gross area of approximately 179,849 square meters. In June 2018, we and China Aluminum Investment and Development Co., Ltd., a wholly-owned subsidiary of Chinalco, renewed a tenancy agreement pursuant to which we would lease from Chinalco the office premises at certain floors of No. 62 North Xizhimen Street, Haidian District, Beijing, PRC, with an aggregate gross floor area of 22,303 square meters. This agreement will expire on December 31, 2021.

Our Expansion

Our expansion projects in 2019 primarily include:

- The Boffa Project: Based on our preliminary research and analysis and after taking into account various factors, the total investment of this project is estimated to be US\$706 million, which is mainly allocated in the construction of mines, ports and lightening system. Accordingly to the preliminary design plan, the estimated investment for the construction of mines is RMB3,088 million. By the end of 2019, an aggregate of RMB1,872 million of capital expenditure for the construction of mines had been incurred. The project commenced construction in September 2018. The quarry of mine was put into operation at the end of 2019 and the first shipment of bauxite was sent to China in February 2020. See “- A. History and Development of the Company – Boffa Project” for more details.

- The 2,000,000-tonne alumina project of Guangxi Huasheng New Material Co., Ltd.: We expect to invest a total amount of approximately RMB5,805 million in this project. By the end of 2019, an aggregate of RMB3,912 million of capital expenditure had been incurred. The project is expected to be completed and put into operation in June 2020.
- The 432,000-tonne light alloy project of Shanxi Zhongrun: We expect to invest a total amount of approximately RMB4,512 million in this project. By March 28, 2019, each shareholder of Shanxi Zhongrun has made its paid-in capital on a pro rata basis, where the Company contributed RMB656.7 million. By the end of 2019, an aggregate of RMB3,637 million of capital expenditure had been incurred. As of the end of 2019, the project had been partially put into operation.
- Ningxia Energy's 200-MW wind power project in Alxa Left Banner, Inner Mongolia: We expect to invest a total amount of approximately RMB1,446 million in this project. By the end of 2019, an aggregate of RMB1,253 million of capital expenditure had been incurred. The project had been connected to the grid for power generation at the end of 2019.

Item 4A. Unresolved Staff Comments

None.

Item 5. Operating and Financial Review and Prospects

The following discussion and analysis should be read in conjunction with our audited consolidated financial statements and selected historical financial data, in each case together with the accompanying notes included elsewhere in this annual report. This section contains certain "forward-looking statements" within the meaning of the United States Private Securities Litigation Reform Act of 1995. Forward-looking statements are not guarantees of our future performance or results and our actual results could materially differ from those disclosed in the forward-looking statements. In evaluating our business, you should carefully consider the information provided in "Item 3. Key Information - D. Risk Factors."

As the business combination under common control incurred in the years ended December 31, 2016, 2017, 2018 and 2019, the comparative financial data for the years ended December 31, 2015, 2016, 2017 and 2018 are revised to reflect the business combination under common control. Unless otherwise indicated in this section, our financial data for the years ended December 31, 2017 and 2018 are presented based on those revised amounts. Please see Note 38 to our audited consolidated financial statements.

A. Operating Results

Overview

We are a leading enterprise in the non-ferrous metal industry in China. We are engaged principally in alumina refining, primary aluminum smelting, and trading of non-ferrous metal products, coal products and other products. In addition, we are engaged in coal mining and power generation. The remainder of our revenues was derived from research and development activities and other products and services. We organize and manage our operations according to the following key segments:

- Our alumina segment, which consists of the mining and purchasing of bauxite and other raw materials, and production and sale of alumina as well as chemical alumina. Alumina accounted for approximately 88.1% of the total production volume for this segment in 2019. Chemical alumina products are used in the production of chemical, pharmaceutical, ceramic and construction materials. In the process of refining bauxite into alumina, we used to produce gallium as a by-product, which is a rare, high-value metal with applications in the electronics and telecommunication industries. In August 2019, we made a capital contribution with all of our gallium assets to China Rare Metals and Rare Earths Company Ltd. and we are not engaged in gallium production currently. See "Item 4. Information on the Company - A. History and Development of the Company - Capital Contribution to China Rare Metals and Rare Earths Company Ltd. with Gallium Assets" for details.

- Our primary aluminum segment, which consists of the procurement of alumina, other raw materials, supplemental materials and electrical power, the production and sale of primary aluminum and aluminum-related products, such as carbon products, aluminum alloy products and other aluminum products. Our principal primary aluminum products are ingots, molten aluminum and aluminum alloys, which accounted for approximately 29%, 38% and 33%, respectively, of our total production volume of primary aluminum in 2019. Our standard 20 kilogram remelt ingots are used for general aluminum fabrication in the construction, electricity, electronics, transportation, packaging, machinery and durable goods industries. We internally produce substantially all the carbon products used at our smelters and sell our remaining carbon products to external customers.
- Our trading segment, which mainly consists of the trading of alumina, primary aluminum, aluminum fabrication products, other non-ferrous metal products, and crude fuels such as coal products, as well as supplemental materials and logistics and transport services to our internal manufacturing plants and external customers. We established our trading business under Chalco Trading as a separate segment in July 2010 as a result of our operational structural adjustment. Since 2014, we have established Chalco Materials, Chalco Logistics and Chalco Trading Group to continuously promote and deepen development of our trading business, jointly constituting our trading segment. Established in 2018, Chalco Trading Group has undertaken the businesses that used to be operated by Chalco Trading.
- Our energy segment, which consists of the research and development, production and operation of energy products, including coal mining and conventional coal-fire power generation as well as renewable energy generation such as wind power and solar power. We are also engaged in new energy equipment production. We established our energy segment in January 2013 as a result of our acquisition of Ningxia Energy in line with our development strategy to partially offset our future energy costs. In 2019, we supplied the majority of the electricity we generated for our own production use, supplied a portion of the coal output to our own electric power plant and sold the remaining portion to external customers. Ningxia Energy supplied the electricity it generated mainly to the state grid in China.
- Our corporate and other operating segment, which consists of corporate and other aluminum-related research, development, and our other activities.

We used to be engaged in aluminum fabrication operations, where we processed primary aluminum for the production and sales of various aluminum fabrication products. As approved at our 2012 annual general meeting held on June 27, 2013, we disposed of substantially all of our aluminum fabrication operations to Chinalco. As a result, we ceased to operate aluminum fabrication business as a separate segment in June 2013.

Critical Accounting Policies

We prepare our consolidated financial statements in accordance with IFRS as issued by the International Accounting Standards Board, which requires the use of certain critical accounting estimates. It also requires management to exercise its judgment in the process of applying the accounting policies. The areas in our financial reporting involving a higher degree of judgment or complexity, or areas where assumptions and estimates are significant to the consolidated financial statements, are disclosed in Note 3 to our consolidated financial statements. We have established procedures and processes to facilitate the making of such judgments in the preparation of our consolidated financial statements. Management has used the best information available but actual performance may differ from our management's estimates and future changes in key variables could change future reported amounts in our consolidated financial statements.

Property, Plant and Equipment

Property, plant and equipment, other than construction in progress ("CIP"), are stated at cost less accumulated depreciation and any impairment losses. When an item of property, plant and equipment is classified as held for sale or when it is part of a disposal group classified as held for sale, it is not depreciated and is accounted for in accordance with IFRS 5. The cost of an item of property, plant and equipment comprises its purchase price and any directly attributable costs of bringing the asset to its working condition and location for its intended use.

Expenditure incurred after items of property, plant and equipment have been put into operation, such as repairs and maintenance, is normally charged to profit or loss in the period in which it is incurred. In situations where the recognition criteria are satisfied, the expenditure for a major inspection is capitalized in the carrying amount of the asset as a replacement. Where significant parts of property, plant and equipment are required to be replaced at intervals, we recognize such parts as individual assets with specific useful lives and depreciate them accordingly.

We calculate depreciation on the straight-line basis to write off the cost of each item of property, plant and equipment to its residual value over its estimated useful life. The principal annual rates used for this purpose are as follows:

Buildings	8-45 years
Machinery	3-30 years
Transportation facilities	6-10 years
Office and other equipment	3-10 years

Where parts of an item of property, plant and equipment have different useful lives, the cost of that item is allocated on a reasonable basis among the parts and each part is depreciated separately. We reviewed and adjusted the assets' depreciation method, residual values and useful lives, if appropriate, at the end of each reporting period.

An item of property, plant and equipment including any significant part initially recognized is derecognized upon disposal or when no future economic benefits are expected from its use or disposal. Any gain or loss on disposal or retirement recognized in profit or loss in the year the asset is derecognized is the difference between the net sales proceeds and the carrying amount of the relevant asset.

CIP represents buildings under construction, and plant and equipment pending for installation, and is stated at cost less any impairment losses. Cost comprises construction expenditures, other expenditures necessary for the purpose of preparing the CIP for its intended use and those borrowing costs incurred before the assets are ready for their intended use that is eligible for capitalization. CIP is transferred to property, plant and equipment when the CIP is ready for its intended use.

Property, plant and equipment and intangible assets – recoverable amount (excluding goodwill)

In accordance with our accounting policy, each asset or cash-generating unit is evaluated in every reporting period to determine whether there are any indications of impairment. If any such indication exists, an estimate of the net recoverable amount is performed and an impairment loss is recognized to the extent that the carrying amount exceeds the recoverable amount. The recoverable amount of an asset or cash-generating unit of assets is measured at the higher of fair value less costs of disposal and value in use.

A fair value measurement of a non-financial asset takes into account a market participant's ability to generate economic benefits by using the asset in its highest and best use or by selling it to another market participant that would use the asset in its highest and best use.

Value in use is generally determined as the present value of the estimated future cash flows of those expected to arise from the continued use of the asset in its present form and its eventual disposal. Present values are determined using a risk-adjusted pre-tax discount rate appropriate to the risks inherent in the asset. Future cash flow estimates are based on significant estimates and judgments involved in the projections of the future prices of aluminum and alumina, expected production and sales volumes, production costs, operating expenses, and discount rates applied to these forecasted future cash flows. These estimates and judgments may be affected by unexpected changes in the future market or economic conditions; hence, there is a possibility that changes in circumstances will alter these projections, which may impact on the recoverable amounts of the assets. In such circumstances, some or all of the carrying value of the assets may be impaired and the impairment would be charged against profit or loss.

Goodwill - recoverable amount

In accordance with our accounting policy, goodwill is allocated to our cash generating units (“CGU”) as it represents the lowest level within the Company at which the goodwill is monitored for internal management purposes and is tested for impairment annually or more frequently if events or changes in circumstance indicated that the carrying amount may be impaired, by comparing the recoverable amount of the CGU and the carrying amount of the CGU. The recoverable amount is the higher of value in use and the fair value less costs of disposal. The recoverable amount of the underlying CGUs involved estimates and judgments, including future prices of aluminum and alumina, expected production and sales volumes, production costs, operating expenses, terminal growth rates used to estimate future cash flows and discount rates applied to these forecasted future cash flows of the underlying CGUs. These estimates and judgments may be affected by unexpected changes in future market or economic conditions.

Intangible assets - mining rights and mineral exploration rights

Our mineral exploration rights and mining rights relate to coal, bauxite and other mines.

(i) Recognition

Except for mineral exploration rights and mining rights acquired in a business combination, mineral exploration rights and mining rights are initially recorded at the cost which includes the acquisition consideration, qualifying exploration and other direct costs. The mineral exploration rights are stated at cost less any impairment, and the mining rights are stated at cost less any amortization and impairment.

(ii) Reclassification

Mineral exploration rights are converted to mining rights when technical feasibility and commercial viability of extracting a mineral resource are demonstrable, and are subject to amortization when commercial production has commenced.

We assess the stage of each mine under construction to determine when a mine moves into the production stage. The criteria used to assess the start date are determined based on the unique nature of each mine construction project. We consider various relevant criteria, such as completion of a reasonable period of testing of the mine and equipment, ability to produce in saleable form (within specifications) and ability to sustain ongoing production to assess when a mine is substantially complete and ready for its intended use.

(iii) Amortization

Amortization of bauxite and other mining rights (except for coal mining rights) is provided on a straight-line basis according to the shorter of the expiration date of the mining certificate and the mineable period of natural resources. Estimated mineable periods of the majority of the mining rights range from 3 to 30 years.

Coal mining rights are amortized on a unit-of-production basis over the economically recoverable reserves evaluated based on the reserves estimated in accordance with the standards in the Solid Mineral Resource/Reserve Classification of the PRC (GB/T17766-1999) of the mine concerned.

(iv) Impairment

An impairment review is performed when there are indicators that the carrying amount of the mineral exploration rights and mining rights may exceed their recoverable amounts. To the extent that this occurs, the excess is fully provided as an impairment loss.

Leases

(1) Applicable from January 1, 2019

We assess at contract inception whether a contract is, or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

(i) As a lessee

We apply a single recognition and measurement approach for all leases, except for short-term leases and leases of low-value assets. We recognize lease liabilities to make lease payments and right-of-use assets representing the right to use the underlying assets.

(a) Right-of-use assets

Right-of-use assets are recognized at the commencement date of the lease (that is the date the underlying asset is available for use). Right-of-use assets are measured at cost, less any accumulated depreciation and any impairment losses, and adjusted for any remeasurement of lease liabilities. The cost of right-of-use assets includes the amount of lease liabilities recognized, initial direct costs incurred, and lease payment made at or before the commencement date less any lease incentives received. Right-of-use assets are depreciated on a straight-line basis over the shorter of the lease terms and the estimated useful lives of the assets as follows:

Buildings	2–20 years
Machinery	2–10 years
Land use rights	10–50 years

If ownership of the leased asset transfers to us by the end of the lease term or the cost reflects the exercise of a purchase option, depreciation is calculated using the estimated useful life of the asset.

(b) Lease liabilities

Lease liabilities are recognized at the commencement date of the lease at the present value of lease payments to be made over the lease term. The lease payments include fixed payments (including in-substance fixed payments) less any lease incentives receivable, variable lease payments that depend on an index or a rate, and amounts expected to be paid under residual value guarantees. The lease payments also include the exercise price of a purchase option reasonably certain to be exercised by us and payments of penalties for termination of a lease, if the lease term reflects us exercising the option to terminate. The variable lease payments that do not depend on an index or a rate are recognized as an expense in the period in which the event or condition that triggers the payment occurs.

In calculating the present value of lease payments, we use our incremental borrowing rate at the lease commencement date because the interest rate implicit in the lease is not readily determinable. After the commencement date, the amount of lease liabilities is increased to reflect the accretion of interest and reduced for the lease payments made. In addition, the carrying amount of lease liabilities is remeasured if there is a modification, a change in the lease term, a change in lease payments (e.g., a change to future lease payments resulting from a change in an index or rate) or a change in assessment of an option to purchase the underlying asset.

Our lease liabilities are included in interest-bearing bank and other borrowings.

(c) Short-term leases and leases of low-value assets

We apply the short-term lease recognition exemption to our short-term leases of machinery and equipment (that is those leases that have a lease term of 12 months or less from the commencement date and do not contain a purchase option). We also apply the recognition exemption for leases of low-value assets to leases of office equipment that are considered to be of low value (i.e. below RMB30,000).

Lease payments on short-term leases and leases of low-value assets are recognized as an expense on a straight-line basis over the lease term.

(ii) As a lessor

When we act as a lessor, it classifies at lease inception (or when there is a lease modification) each of our leases as either an operating lease or a finance lease.

Leases in which we do not transfer substantially all the risks and rewards incidental to ownership of an asset are classified as operating leases. When a contract contains lease and non-lease components, we allocate the consideration in the contract to each component on a relative stand-alone selling price basis. Rental income is accounted for on a straight-line basis over the lease terms and is included in revenue in profit or loss due to its operating nature. Initial direct costs incurred in negotiating and arranging an operating lease are added to the carrying amount of the leased asset and recognized over the lease term on the same basis as rental income. Contingent rents are recognized as revenue in the period in which they are earned.

Leases that transfer substantially all the risks and rewards incidental to ownership of an underlying assets to the lessee, are accounted for as finance leases. At the commencement date, the cost of the leased asset is capitalized at the present value of the minimum lease payments and related payments (including the initial direct costs), and presented as a receivable at an amount equal to the net investment in the lease. The finance costs of such leases are charged to profit or loss so as to provide a constant periodic rate of charge over the lease terms.

(2) Applicable before January 1, 2019

Leases that transfer substantially all the rewards and risks of ownership of assets to us, other than legal title, are accounted for as finance leases. At the inception of a finance lease, the cost of the leased asset is capitalized at the present value of the minimum lease payments and recorded together with the obligation, excluding the interest element, to reflect the purchase and financing. Assets held under capitalized finance leases, including prepaid land lease payments under finance leases, are included in property, plant and equipment, and depreciated over the shorter of the lease terms and the estimated useful lives of the assets. The finance costs of such leases are charged to profit or loss so as to provide a constant periodic rate of charge over the lease terms.

Assets acquired through hire purchase contracts of a financing nature are accounted for as finance leases, but are depreciated over their estimated useful lives.

Leases where substantially all the rewards and risks of ownership of assets remain with the lessor are accounted for as operating leases. Where we are the lessor, assets leased by us under operating leases are included in non-current assets, and rentals receivable under the operating leases are credited to profit or loss on the straight-line basis over the lease terms. Where we are the lessee, rentals payable under operating leases net of any incentives received from the lessor are charged to profit or loss on the straight-line basis over the lease terms.

Prepaid land lease payments under operating leases are initially stated at cost and subsequently recognized on the straight-line basis over the lease terms.

Provision for expected credit losses on trade receivables

We use a provision matrix to calculate expected credit losses for trade receivables. The provision rates are based on days past due for groupings of various customer segments that have similar loss patterns (i.e., by product type, customer type, and coverage by letters of credit and other forms of credit insurance).

The provision matrix is initially based on our historical observed default rates. We will calibrate the matrix to adjust the historical credit loss experience with forward-looking information. For instance, if forecast economic conditions (i.e. gross domestic products) are expected to deteriorate over the next year which can lead to an increased number of defaults in the manufacturing sector, the historical default rates are adjusted. At each reporting date, the historical observed default rates are updated and changes in the forward-looking estimates are analyzed.

The assessment of the correlation among historical observed default rates, forecast economic conditions and expected credit losses is a significant estimate. The amount of expected credit losses is sensitive to changes in circumstances and forecast economic conditions. Our historical credit loss experience and forecast of economic conditions may also not be representative of the customer's actual default in the future. The information about the expected credit losses on our trade receivables is disclosed in Note 13 to our consolidated financial statements.

Estimated impairment of inventories

In accordance with our accounting policy, our management tests whether inventories suffered any impairment based on estimates of the net realizable amount of the inventories. For different types of inventories, it requires the estimation on selling prices, costs of conversion, selling expenses and the related tax expense to calculate the net realizable amount of inventories. For inventories held for executed sales contracts, management estimates the net realizable amount based on the contracted price. For raw materials and work-in-progress, our management has established a model in estimating the net recoverable amount at which the inventories can be realized in the normal course of business after considering our manufacturing cycles, production capacity and forecasts, estimated future conversion costs and selling prices. The management also takes into account the price or cost fluctuations and other related matters occurring after the end of the reporting period which reflect conditions that existed at the end of the reporting period.

It is reasonably possible that if there is a significant change in circumstances, including our business and the external environment, outcomes within the next financial year would be significantly affected.

Coal reserve estimates and units-of-production amortization for coal mining rights

External qualified valuation professionals evaluate "economically recoverable reserves" based on reserves estimated by external qualified exploration engineers in accordance with the PRC standards. The estimates of our coal reserves are inherently imprecise and represent only the approximate amounts of the coal reserves because of the subjective judgments involved in developing such information. Economically recoverable reserve estimates are evaluated on a regular basis and have taken into account recent production and technical information about each mine.

Income Tax

We estimate our income tax provision and deferred income taxation in accordance with the prevailing tax rules and regulations, taking into account any special approvals obtained from the relevant tax authorities and any preferential tax treatment to which we are entitled in each location or jurisdiction in which we operate. There are many transactions and calculations for which the ultimate tax determination is uncertain during the ordinary course of business. We recognize liabilities for anticipated tax audit issues based on estimates of whether additional taxes will be due. Where the final tax outcome of these matters is different from the amounts that were initially recorded, such differences will impact the income tax and deferred income tax provisions in the period in which such determination is made.

Deferred tax assets are recognized for unused tax losses and deductible temporary differences, such as the provision for impairment of receivables, inventories and property, plant and equipment and accruals of expenses not yet deductible for tax purposes, to the extent that it is probable that taxable profits will be available against which the losses deductible temporary difference can be utilized. Significant management judgment is required to determine the amount of deferred tax assets that can be recognized, based upon forecast of future taxable profits which was complex and judgmental and was based on significant assumptions, including future tax rates, the possible utilization of loss carry forwards and future taxable profits that are affected by unexpected changes in the tax law framework and future market or economic conditions. The carrying value of our deferred tax assets as of December 31, 2019 was RMB1,522.2 million, compared with approximately RMB1,542.7 million as of December 31, 2018, after taking into consideration the offsetting of the balances within the same tax jurisdiction. The amount of unrecognized tax losses as of December 31, 2019, was RMB6,210.3 million, compared with approximately RMB11,387.5 million as of December 31, 2018.

An entity shall recognize a deferred tax liability for all taxable temporary differences associated with investments in subsidiaries, associates and joint ventures, except to the extent that both of the following conditions are satisfied: (a) the parent, investor or joint venturer is able to control the timing of the reversal of the temporary difference; and (b) it is probable that the temporary difference will not reverse in the foreseeable future.

We believe that we have recorded adequate current tax provision and deferred taxes based on the prevailing tax rules and regulations and our current best estimates and assumptions. In the event that future tax rules and regulations or related circumstances change, adjustments to current and deferred taxation may be necessary which would impact our results or financial position.

Revenue recognition

(i) Revenue from contracts with customers

We adopted IFRS 15 from January 1, 2018 using the modified retrospective method of adoption. We applied IFRS 15 to contracts that are initiated after the effective date and contracts that had remaining obligations as of the effective date. In respect of the prior periods, we retained prior period's figures as reported under the previous standards, recognizing the cumulative effect of applying IFRS 15 as an adjustment to the opening balance of equity as at January 1, 2018. We concluded that the transitional adjustment to be made on January 1, 2018 to accumulated losses upon initial adoption of IFRS 15 is nil. It is because we recognize revenue upon the transfer of significant risks and rewards, which coincides with the fulfilment of performance obligations. Additionally, our contracts with customers generally has only one performance obligation.

Revenue from contracts with customers is recognized when control of goods or services is transferred to the customers at an amount that reflects the consideration to which we expect to be entitled in exchange for those goods or services.

When the consideration in a contract includes a variable amount, the amount of consideration is estimated to which we will be entitled in exchange for transferring the goods or services to the customer. The variable consideration is estimated at contract inception and constrained until it is highly probable that a significant revenue reversal in the amount of cumulative revenue recognized will not occur when the associated uncertainty with the variable consideration is subsequently resolved.

When the contract contains a financing component which provides the customer with a significant benefit of financing the transfer of goods or services to the customer for more than one year, revenue is measured at the present value of the amount receivable, discounted using the discount rate that would be reflected in a separate financing transaction between us and the customer at contract inception. When the contract contains a financing component which provides us a significant financial benefit for more than one year, revenue recognized under the contract includes the interest expense accreted on the contract liability under the effective interest method. For a contract where the period between the payment by the customer and the transfer of the promised goods or services is one year or less, the transaction price is not adjusted for the effects of a significant financing component, using the practical expedient in IFRS 15.

- Sale of industrial products

Revenue from the sale of industrial products (including sales of scrap and other materials) is recognized at the point in time when control of the asset is transferred to the customer, generally on delivery of the industrial products.

- Rendering of services

Revenue from services is recognized over time, using an input method to measure progress towards complete satisfaction of the service, because the customer simultaneously receives and consumes the benefits provided by us. Revenue is recognized on a straight-line basis because the entity's inputs are expended evenly throughout the performance period.

(ii) Revenue from other sources

- Rental income

Rental income is recognized on a time proportion basis over the lease terms. Variable lease payments that do not depend on an index or a rate are recognized as income in the accounting period in which they are incurred.

- Other income

Interest income is recognized on an accrual basis using the effective interest method by applying the rate that exactly discounts the estimated future cash receipts over the expected life of the financial instrument or a shorter period, when appropriate, to the net carrying amount of the financial asset.

Dividend income is recognized when the shareholders' right to receive payment has been established, it is probable that the economic benefits associated with the dividend will flow to us and the amount of the dividend can be measured reliably.

New IFRS Pronouncements

For a detailed discussion of new accounting pronouncements, please see Note 2 to our audited consolidated financial statements.

Factors Affecting Our Results of Operations

We believe that the following factors which impact our various revenue and expense items (as described below) have had, and will continue to have, a significant effect on the development of our business, financial position and results of operation.

Economic Condition of China and the World

As the major aluminum product market is globalized, the demand for and prices of our products are highly correlated with the general economic condition of China and the world and the performance of the major aluminum and related product markets. In recent years, China's economy continued to experience growth despite the negative effects of the global financial crisis beginning in the second half of 2008 and economic recession in 2009, as well as general market volatility and changing macroeconomic conditions. However, the growth of China's economy has shown signs of slowing down since 2014, with GDP growth of 6.9% from 2014 to 2015, 6.7% from 2015 to 2016, 6.9% from 2016 to 2017, 6.6% from 2017 to 2018 and 6.1% from 2018 to 2019, as compared to 7.5% from 2013 to 2014. In addition, the outbreak and global spread of the COVID-19 in 2020 may adversely affect global and China's economy and financial market in general. Please refer to "Item 3. Key Information - D. Risk Factors - Our business may be materially and adversely affected by the recent outbreak of COVID-19" for further details of the impact of the outbreak of COVID-19.

The global output of alumina (with chemical alumina products included) in 2019 increased by approximately 5.4% from 2018 to approximately 131.41 million tonnes. The global alumina consumption (with chemical alumina products included) in 2019 increased approximately by 1.1% from 2018 to approximately 129.85 million tonnes. In 2019, the domestic output of alumina (with chemical alumina products included) decreased approximately by 0.4% from 2018 to approximately 71.55 million tonnes and the domestic consumption for alumina (with chemical alumina products included) increased by approximately 0.4% from 2018 to approximately 72.98 million tonnes.

The global output of primary aluminum in 2019 decreased approximately by 0.6% from 2018 to approximately 63.78 million tonnes. The global consumption of primary aluminum in 2019 decreased approximately 0.8% from 2018 to approximately 65.15 million tonnes. In 2019, the domestic output of primary aluminum decreased approximately by 1.8% from 2018 to approximately 35.93 million tonnes and the domestic consumption of primary aluminum decreased approximately by 1.2% from 2018 to approximately 36.55 million tonnes.

Mix and Pricing of Our Products

We are engaged principally in alumina refining, primary aluminum smelting and sales of these products and trading of non-ferrous metal products and other products. In addition, we are engaged in coal mining and power generation. We coordinate substantially all of our sales and marketing activities for our self-produced alumina products and some of our sales and marketing activities for our self-produced primary aluminum products through Chalco Trading Group, taking into account the spot market prices and SHFE prices. In 2019, revenues generated from alumina, primary aluminum, trading and energy segments (after elimination of inter-segment sales) accounted for 7.5%, 19.7%, 68.9% and 3.7%, respectively, of our consolidated total revenues after elimination of inter-segment sales. We apply different policies to price different products. For information on our pricing of different products, please see the section headed “Item 4. Information of the Company - B. Business Overview - Sales and Marketing.”

The sales prices of alumina that our alumina refineries sell internally to Chalco Trading Group are determined based on our budgeted sale prices, spot market prices and the prices of primary aluminum on SHFE. Chalco Trading Group coordinates the external negotiation and execution of sales contracts of our alumina products. The alumina prices in both domestic and international market decreased in 2019 when compared to that of 2018. The decline in sales price in international market was attributable to the uncertainties and the sluggish global economy as the result of, among other things, intensified trade and geopolitical tensions in 2019, as well as the increase in alumina production overseas. The alumina sales price in domestic market declined because of the stagnant alumina demand, the increase in domestic alumina production capacity and the recovered import volume of alumina. In 2019, the spot price of alumina in the international market reached a high of approximately US\$418 per tonne and bottomed out at approximately US\$275 per tonne. The average spot price of alumina in the international market was approximately US\$333 per tonne, representing a decrease of 29.6% from 2018. The spot price of alumina in the domestic market reached a high of RMB3,131 per tonne and bottomed out at RMB2,408 per tonne. The average spot price of alumina in the domestic market was approximately RMB2,696 per tonne, representing a decrease of 9.9% from 2018. Our average selling price of alumina decreased by 5.9% from RMB2,918 per tonne in 2018 to RMB2,747 per tonne in 2019.

Like most primary aluminum producers in China, we price our primary aluminum products by reference to the primary aluminum spot prices and futures price on the SHFE. In 2019, three month aluminum futures prices reached a high of US\$1,951 per tonne and a low of US\$1,705 per tonne on LME; and a high of RMB14,585 per tonne and a low of RMB13,225 per tonne on SHFE. The average three-month aluminum futures prices at SHFE decreased by 3.5% from RMB14,375 per tonne in 2018 to RMB13,877 per tonne in 2019. Our average selling price of primary aluminum decreased by 3.1% from RMB14,313 per tonne in 2018 to RMB13,869 per tonne in 2019. In 2019, the primary aluminum prices in global market generally declined due to the slowdown of global economic growth, the escalation of trade tensions between the U.S. and China and the weak market demand, as well as the increase in overseas aluminum production volume and production capacity in 2019. The primary aluminum prices in domestic market also declined in general in 2019 due to the decrease in consumption of primary aluminum, but such decline was partially offset as a result of the relatively strong Chinese economy, implementation of tax reduction policy and decrease in primary aluminum output due to severe weather and industrial accidents in the second half of 2019.

Price Volatility of Non-ferrous Metal and Coal Products

Since late 2009, as a result of the implementation of our operational structural adjustment, we have been engaged substantially in the trading of outsourced non-ferrous metal products to increase our profit. In 2012, we began to engage in the trading of significant amounts of outsourced coal products to diversify our product portfolio. Although the profit margin of sales of outsourced products is typically lower than that of our self-produced products, we generated substantial revenues and profit from the trading of outsourced products during the past few years due to our significant trading volumes. Our revenue generated from external sales of products purchased from external sources in 2019 was approximately RMB106,542.9 million, representing approximately 81.4% of total revenue from external sales in our trading segment. From time to time, we may enter into futures and option transactions in addition to the simple buy-low-sell-high trading model to hedge against price fluctuations in the non-ferrous metal and coal products market. However, short-term price volatility of these products remains a key factor affecting our operation results, as we need to make the correct prediction concerning the price trends of these products on the markets to ensure substantial revenues through large trading volume. If the market price trend does not match our prediction, we may be forced to sell trading products at low prices or to purchase trading products at high prices, which may adversely affect gross margins and profitability.

Manufacturing Costs

Our cost of revenues consists primarily of the costs of raw materials, overhead cost and electric power cost. Our principal raw material is bauxite. For the years ended December 31, 2017, 2018 and 2019, bauxite supplied by our mines accounted for 47%, 44% and 38%, respectively, of our total bauxite used in the production of alumina. The unit cost of bauxite produced by us is generally lower than the unit cost of bauxite procured from external suppliers. In 2019, as a result of the decrease in costs of soda ash and fuel, our average cost of alumina per tonne decreased by approximately 1.1% from that in 2018.

Primary aluminum is one of our major aluminum products and is produced by smelting operations. Smelting operations require a substantial and continuous supply of electricity. Electricity cost is the most significant component of our primary aluminum production cost and accounted for approximately 34% of our unit production cost for primary aluminum in 2019. The availability and price of electricity are key considerations in our primary aluminum operations. Interruptions of electricity supply can result in lengthy production shutdowns, increased costs associated with restarting production and waste of production in progress, and prolonged interruptions can cause damage to, or the destruction of, production equipment and facilities. Our average annual electricity price per kWh (including tax) decreased by 2% from 2017 to 2018 and further decreased by 4% from 2018 to 2019.

Given our high proportion of fixed costs, we must generate sufficient sales to absorb our fixed costs to maintain or increase our operating margins. Our acquisitions and production expansion in recent years have significantly increased our costs that are relatively fixed in nature, such as leases and depreciation of property, plant and equipment and employee benefit expenses. If we are able to maintain satisfactory facility utilization rates and productivity, our production capacity expansion will enable us to reduce our unit costs through economies of scale and recover associated increased costs through higher output. In 2019, we continued to focus on lowering production costs and increasing production efficiency through reducing raw material consumption by improving technology and internal management.

Availability and Costs of Financing

We require a significant amount of capital to fund our operations. For example, we need substantial amounts of funds for expanding our operations, purchasing and maintaining equipment and procuring commodities. We have in the past funded our capital expenditures primarily with bank loans and the issuance of medium-term notes and bonds and long-term bonds. The availability of financing is subject to various factors, including our credit history and the prevailing credit policy adopted by the PRC government. Over the years, we have maintained good relationships with the commercial banks in China, which enables us to access bank financing at relatively low costs. Any change of lending policies adopted by the PRC government in the future may, among other things, affect our ability to obtain financing and may in turn adversely affect our operating results.

Due to the increase of interest on lease liabilities as a result of the adoption of new accounting standards, although the expense of other interest decreased in 2019, our finance costs remained stable from 2018 to 2019. If we are unable to secure sufficient external funding when required, we may not be able to fund our working capital requirements and necessary capital expenditures, which could adversely affect our business, financial performance and prospects.

In addition, our borrowing costs and access to debt financing depend significantly on our credit ratings. These ratings, including long-term corporate credit ratings and financing bond credit ratings, are assigned by rating agencies, which may lower or withdraw their ratings. Any change in our credit ratings or average interest rate could have negative implications, which may increase our finance costs and affect our financial results.

Regulatory Environment

The central and local governments in the PRC continues to exercise a substantial degree of control and influence over the aluminum and other non-ferrous metal products industry in China and shape the structure and development of the industry through the imposition of industry policies governing major project approvals and safety, environmental and quality regulations. If the PRC government changes its current policies or the interpretation of those policies that are currently beneficial to us, we may face pressure on profit margins and significant constraints on our ability to expand our business operations.

Selected Statement of Operation Items

Revenue

Our revenue is primarily generated from sales of alumina, primary aluminum, other non-ferrous metal products and coal products. In addition, we are engaged in coal mining and power generation. The remainder of our revenues was derived from research and development activities and other products and services. We established our trading and energy businesses as new business segments in 2010 and 2013, respectively.

Cost of Sales

Our cost of sales consists primarily of the purchase of inventories in relation to trading activities, cost of raw materials, consumables and electric power used in manufacturing, the fixed cost of and employee benefit expenses. For the years ended December 31, 2017, 2018 and 2019, our cost of sales was RMB166,290.3 million, RMB167,029.4 million and RMB177,946.3 million, respectively, and accounted for 91.9%, 92.7% and 93.6%, respectively, of the total consolidated revenues for those periods.

Operating Expenses

Selling and Distribution Expenses. Our selling and distribution expenses consist primarily of transportation and loading expenses, packaging expense and, to a lesser extent, port expenses and employee benefit expenses for employees in selling and distribution department. Selling and distribution expenses accounted for 31.9%, 33.5% and 23.9% of our total operating expenses for the years ended December 31, 2017, 2018 and 2019, respectively.

General and Administrative Expenses. Our general and administrative expenses consist primarily of early retirement benefit expenses, employee benefit expenses for directors and officers and employees in administrative department and, to a lesser extent, taxes other than income tax expenses, depreciation of non-production property, plant and equipment, provision for impairment of receivables, termination benefit expenses, operating lease rental expenses, travelling and entertainment, legal and other professional fees, amortization of right-of-use assets, utilities and office supplies, insurance expense, pollutants discharge fees, repairs and maintenance expenses, auditors' remuneration, amortization of intangible assets, and others. General and administrative expenses accounted for 61.2%, 53.1% and 56.5% of our total operating expenses for the years ended December 31, 2017, 2018 and 2019, respectively. Employee benefit expenses, including salaries and bonus, housing fund, staff welfare and other expenses, employment expense in relation to early retirement schemes, termination benefit and retirement benefit cost-defined contribution schemes, comprise a significant component of our general and administrative expenses, accounting for 51.6%, 40.1% and 46.3% of our total general and administrative expenses for the years ended December 31, 2017, 2018 and 2019, respectively.

Research and Development Expenses. Our research and development expenses accounted for 6.7%, 8.4% and 13.4% of our total operating expenses for the years ended December 31, 2017, 2018 and 2019, respectively.

Impairment loss on property, plant and equipment. Our impairment loss on property, plant and equipment accounted for 0.2%, 0.6% and 3.7% of our total operating expenses for the years ended December 31, 2017, 2018 and 2019, respectively. The significant increase in impairment loss on property, plant and equipment in 2019 was primarily resulting from the impairment loss on the plant and production facilities of Shanxi Huasheng for its termination of production.

Impairment losses on financial assets. Our impairment losses on financial assets accounted for 2.4% of our total operating expenses for the year ended December 31, 2019.

Impairment losses on investments in joint ventures. We did not incur any impairment losses on investments in joint ventures for the year ended December 31, 2019.

Other Income

Our other income consists primarily of tax returns and grants on industrial development support from the government. For the year ended December 31, 2019, our other income was RMB79.5 million, and accounted for 0.04% of the total consolidated revenues.

Other Gains, net

Our other net gains consisted primarily of gains on disposal of subsidiaries, gains on disposal of property, plant and equipment, gains on share of associates' net assets, gains on disposal of joint venture or associates and gains on disposal of business. For the year ended December 31, 2019, our other net gains were RMB1,247.2 million, and accounted for 0.7% of the total consolidated revenues.

Finance Income

Our finance income consists primarily of interest income. For the year ended December 31, 2019, our finance income was RMB261.2 million, and accounted for 0.1% of the total consolidated revenues.

Finance Costs

Our financing costs consist primarily of interest expense on our borrowings. Interest rates on loans related to capital expenditures and working capital set by banks generally follow guidelines issued by the PBOC. The PBOC regulates the interest rates for commercial loans charged by state-owned banks from time to time as part of the PRC government's efforts to regulate the PRC economy. In 2019, we incurred interest expense (net of capitalized interest) of RMB4,375.8 million on our borrowings.

Share of Profits and Losses of Joint Ventures

Our share of profits and losses of joint ventures is the profit attributable to us from our joint ventures, based on our equity interests in such joint ventures. A joint venture is a type of joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the joint venture. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require unanimous consent of the parties sharing control.

Share of Profits and Losses of Associates

Our share of profits and losses of associates is the profit attributable to us from our associates, based on our equity interests in such associates. An associate is an entity over which we have significant influence but not control.

Consolidated Results of Operations

The following table sets forth certain income and expense items as a percentage of our revenues from our consolidated statements of comprehensive income for the periods indicated:

	Year Ended December 31,						
	2017		2018		2019		
	RMB	(%)	RMB	(%)	RMB	US\$	
	<i>(in millions, except percentage)</i>						
Revenue	181,022.6	100.0	180,241.4	100.0	190,074.2	27,302.4	100.0
Cost of Sales	(166,290.3)	(91.9)	(167,029.4)	(92.7)	(177,946.3)	(25,560.4)	(93.6)
Gross Profit	14,732.3	8.1	13,212.0	7.3	12,127.9	1,742.0	6.4
Selling and distribution expenses	(2,373.0)	(1.3)	(2,496.9)	(1.4)	(1,673.1)	(240.3)	(0.9)
General and administrative expenses	(4,551.2)	(2.5)	(3,959.2)	(2.2)	(3,956.6)	(568.3)	(2.1)
Research and development expenses	(498.2)	(0.3)	(626.9)	(0.3)	(940.8)	(135.1)	(0.5)
Impairment loss on property, plant and equipment	(16.2)	<0.1	(46.5)	<0.1	(259.4)	(37.3)	(0.1)
Impairment losses on financial assets	—	—	(108.0)	(0.1)	(169.8)	(24.4)	<0.1
Impairment losses on investments in joint ventures	—	—	(217.0)	(0.1)	—	—	—
Other income	89.9	<0.1	135.5	<0.1	79.5	11.4	<0.1
Other gains, net	319.4	0.2	921.9	0.5	1,247.2	179.2	0.7
Operating profit	7,703.0	4.2	6,814.9	3.8	6,454.9	927.2	3.4
Finance Income	706.7	0.4	492.2	0.3	261.2	37.5	0.1
Finance cost	(5,203.4)	(2.9)	(4,882.5)	(2.7)	(4,921.2)	(706.9)	(2.6)
Share of profits and losses of joint ventures	8.1	<0.1	(199.5)	(0.1)	270.1	38.8	0.1
Share of profits and losses of associates	(165.2)	<0.1	39.4	<0.1	48.8	7.0	<0.1
Profit before income tax	3,049.2	1.7	2,264.5	1.3	2,113.8	303.6	1.1
Income tax benefit/(expense)	(643.7)	(0.4)	(822.5)	(0.5)	(625.7)	(89.9)	(0.3)
Profit for the year	2,405.5	1.3	1,442.0	0.8	1,488.1	213.7	0.8

No customer individually accounted for more than 10% of our total revenue for the year ended December 31, 2019. Sales to Chinalco and its subsidiaries, joint ventures, associates and other related parties accounted for approximately 8.2%, 11.2% and 13.0% of consolidated revenues for the years ended December 31, 2017, 2018 and 2019, respectively. For information on related party transactions, see “Item 7. Major Shareholders and Related Party Transactions - B. Related Party Transactions” and Note 35 to our audited consolidated financial statements.

Year Ended December 31, 2019 Compared with Year Ended December 31, 2018

Revenue

Our revenue increased by 5.5% from RMB 180,241.4 million for the year ended December 31, 2018, to RMB 190,074.2 million for the year ended December 31, 2019, primarily due to the increase in revenue generated from the sales of products sourced from external suppliers. Please see “- Discussion of Segment Operations - Year Ended December 31, 2019 Compared with Year Ended December 31, 2018 – Trading Segment” for discussion regarding sales of outsourced products in 2019 as compared to 2018.

Cost of Sales

Our cost of sales increased by 6.5% from RMB167,029.4 million for the year ended December 31, 2018, to RMB177,946.3 million for the year ended December 31, 2019, primarily due to the increase in the procurement costs from products sourced from external suppliers. Please see “- Discussion of Segment Operations - Year Ended December 31, 2019 Compared with Year Ended December 31, 2018 – Trading Segment” for detailed discussion regarding procurement of outsourced products in 2019 as compared to 2018.

Selling and Distribution Expenses

Our selling and distribution expenses decreased by 33.0% from RMB2,496.9 million for the year ended December 31, 2018, to RMB1,673.1 million for the year ended December 31, 2019, primarily due to the decrease in transportation expenses of products.

General and Administrative Expenses

Our general and administrative expenses remained stable from RMB3,959.2 million for the year ended December 31, 2018, to RMB3,956.6 million for the year ended December 31, 2019.

Research and Development Expenses

Our research and development expenses increased by 50.1% from RMB626.9 million in the year ended December 31, 2018 to RMB940.8 million for the year ended December 31, 2019, primarily due to the increase in investment in research and development of bauxite utilization improvement and high-quality alumina.

Other Income

Other income decreased by 41.3% from RMB135.5 million in the year ended December 31, 2018 to RMB79.5 million for the year ended December 31, 2019, primarily due to the decreases in the government grants recorded under other income.

Other Gains, Net

Our net other gains increased by 35.3% from RMB921.9 million for the year ended December 31, 2018 to RMB1,247.2 million for the year ended December 31, 2019, primarily due to the increase in gains from our investment in certain associates and the increase in gains on disposal of certain subsidiaries, associates and business, partially offset by the decrease in gains on re-measured equity value because we converted certain entities from joint ventures and associates to our subsidiaries in 2018 while we did not have such conversion in 2019. Please see “- Year Ended December 31, 2018 Compared with Year Ended December 31, 2017 – Other Gains, Net” for details of such conversion in 2018.

Finance Income

Our finance income decreased by 46.9% from RMB492.2 million for the year ended December 31, 2018 to RMB261.2 million for the year ended December 31, 2019, primarily due to the decrease in interest income resulting from the decrease in cash and cash equivalent held by us.

Finance Costs

Due to the increase of interest on lease liabilities as a result of the adoption of new accounting standards, although the expense of other interest decreased in 2019, our finance costs remained stable from RMB4,882.5 million for the year ended December 31, 2018 to RMB4,921.2 million for the year ended December 31, 2019.

Share of Profits and Losses of Joint Ventures

We had a profit of RMB270.1 million in our share of profits and losses of joint venture for the year ended December 31, 2019, whereas we incurred a loss of RMB199.5 million in our share of profits and losses of joint venture for the year ended December 31, 2018. This was primarily attributable to the increase in profitability of some of our joint ventures.

Share of Profits and Losses of Associates

Our profit in our share of profits and losses of associates increased by 24.0% from RMB39.4 million for the year ended December 31, 2018 to RMB48.8 million for the year ended December 31, 2019. This was primarily attributable to improved operations of some of our associates that experienced losses in 2018.

Income Tax

Our income tax expense decreased by 23.9% from RMB822.5 million for the year ended December 31, 2018 to RMB625.7 million for the year ended December 31, 2019. This was mainly because we had deferred tax expenses in 2018 but deferred tax benefits in 2019.

Results of Operations

As a result of the foregoing, our net profit increased by 3.2% from RMB1,442.0 million for the year ended December 31, 2018 to RMB1,488.1 million for the year ended December 31, 2019.

Year Ended December 31, 2018 Compared with Year Ended December 31, 2017

Revenue

Our revenue remained stable from RMB181,022.6 million for the year ended December 31, 2017, to RMB180,241.4 million for the year ended December 31, 2018, mainly because the increases in the revenue generated from external sales of our primary aluminum segment and energy segment were offset by the decrease in the revenue generated from external sales of our trading segment. Please see “- Discussion of Segment Operations - Year Ended December 31, 2018 Compared with Year Ended December 31, 2017” for discussion regarding segment revenues in 2018 as compared to 2017.

Cost of Sales

Our cost of sales remained stable from RMB166,290.3 million for the year ended December 31, 2017, to RMB167,029.4 million for the year ended December 31, 2018, mainly because the increases in the cost of sales incurred from external sales of our primary aluminum segment and energy segment were offset by the decrease in the cost of sales incurred from external sales of our trading segment. Please see “- Discussion of Segment Operations - Year Ended December 31, 2018 Compared with Year Ended December 31, 2017” for discussion regarding segment cost and expenses in 2018 as compared to 2017.

Selling and Distribution Expenses

Our selling and distribution expenses increased by 5.2% from RMB2,373.0 million for the year ended December 31, 2017, to RMB2,496.9 million for the year ended December 31, 2018, primarily due to the increase of freight charges arising from increased sales.

General and Administrative Expenses

Our general and administrative expenses decreased by 13.0% from RMB4,551.2 million for the year ended December 31, 2017, to RMB3,959.2 million for the year ended December 31, 2018, primarily attributable to the non-recurring provisions for early retirement benefits for certain employees made in 2017.

Research and Development Expenses

Our research and development expenses increased by 25.8% from RMB498.2 million in the year ended December 31, 2017 to RMB626.9 million for the year ended December 31, 2018, primarily due to increase in the research and development investment in high-quality alumina, premium aluminum alloy and upgrading of production technology.

Other Income

Other income increased by 50.6% from RMB89.9 million in the year ended December 31, 2017 to RMB135.5 million for the year ended December 31, 2018, primarily due to the increases in the government grants recorded under other income.

Other Gains, Net

Our net other gains increased significantly from RMB319.4 million for the year ended December 31, 2017 to RMB921.9 million for the year ended December 31, 2018, primarily due to the increase in our equity value in certain entities that were converted from joint ventures and associates to our subsidiaries during the year and were therefore re-measured in connection with such conversion.

Finance Income

Our finance income decreased by 30.3% from RMB706.7 million for the year ended December 31, 2017 to RMB492.2 million for the year ended December 31, 2018, primarily due to decreases in the interest received from unpaid disposal proceeds and interest income from our related party loans.

Finance Costs

Our finance costs decreased by 6.2% from RMB5,203.4 million for the year ended December 31, 2017 to RMB4,882.5 million for the year ended December 31, 2018, primarily due to decrease in interest-bearing loans and borrowings during the year.

Share of Profits and Losses of Joint Ventures

We incurred a loss of RMB199.5 million in our share of profits and losses of joint venture for the year ended December 31, 2018, whereas we had a profit of RMB8.1 million in our share of profits and losses of joint venture for the year ended December 31, 2017. This was primarily attributable to the decrease in profitability of our major joint ventures.

Share of Profits and Losses of Associates

We had a profit of RMB39.4 million in our share of profits and losses of associates for the year ended December 31, 2018, whereas we incurred a loss of RMB165.2 million in our share of profits and losses of associates for the year ended December 31, 2017. This was primarily attributable to improved operations of our associates which experienced losses in 2017.

Income Tax

Our income tax expense increased by 27.8% from RMB643.7 million for the year ended December 31, 2017 to RMB822.5 million for the year ended December 31, 2018. This was mainly because we had deferred tax benefits in 2017 but deferred tax expenses in 2018.

Results of Operations

Our net profit decreased by 40.1% from RMB2,405.5 million for the year ended December 31, 2017 to RMB1,442.0 million for the year ended December 31, 2018. This was primarily due to decrease of our gross profit, which mainly resulted from the decrease in sales price of primary aluminum and the increase in prices of raw materials.

Discussion of Segment Operations

We account for our operations on a segmental basis; that is, separately preparing the accounting for our alumina, primary aluminum, trading, energy and corporate and other operating segments. Unless otherwise indicated, also included in these segments are other revenues derived from activities such as supplying electricity, gas, heat and water to our affiliates, selling scrap and other materials and providing services including transportation and research and development to third parties. For additional information relating to our business segments and segment presentation, see Note 4 to our consolidated financial statements.

The following table sets forth a breakdown of our revenues by segment and the contribution of external sales and inter-segment sales for the periods indicated:

	2017	2018	Year Ended December 31,		2019	2019
	RMB	RMB	2019 RMB	2019 US\$	%	%
<i>(in millions, except percentage)</i>						
Revenue						
<i>Alumina:</i>						
External sales	14,565.3	14,758.4	14,326.6	2,057.7	5.6	7.5
Inter-segment sales	24,431.9	29,392.5	29,573.4	4,248.0	11.4	
Total	38,997.2	44,150.9	43,900.0	6,305.7	17.0	
<i>Primary aluminum:</i>						
External sales	36,552.0	41,344.3	37,394.6	5,371.4	14.4	19.7
Inter-segment sales	10,693.7	12,457.9	11,694.4	1,679.8	4.5	
Total	47,245.7	53,802.2	49,089.0	7,051.2	18.9	
<i>Trading</i>						
External sales	123,697.8	116,647.5	130,917.3	18,805.1	50.4	68.9
Inter-segment sales	23,159.1	25,370.3	27,769.0	3,988.8	10.7	
Total	146,856.9	142,017.8	158,686.3	22,793.9	61.1	
<i>Energy</i>						
External sales	5,733.7	7,037.0	7,109.8	1,021.3	2.7	3.7
Inter-segment sales	517.3	198.3	236.1	33.9	0.1	
Total	6,251.0	7,235.3	7,345.9	1,055.2	2.8	
<i>Corporate and others</i>						
External sales	473.8	454.2	325.9	46.8	0.1	0.2
Inter-segment sales	171.5	213.0	167.1	24.0	0.1	
Total	645.3	667.2	493.0	70.8	0.2	
Total Revenues before inter-segment eliminations	239,996.1	247,873.4	259,514.2	37,276.8	100.0	
Eliminations of inter-segment sales	(58,973.5)	(67,632.0)	(69,440.0)	(9,974.4)	(26.8)	
Consolidated total revenues	181,022.6	180,241.4	190,074.2	27,302.4	73.2	100.0

The following table sets forth segment results before income tax by segment for the periods indicated:

	Year Ended December 31,			
	2017	2018	2019	2019
	RMB	RMB	RMB	US\$
	(in millions)			
<i>Alumina:</i>				
Revenues	38,997.2	44,150.9	43,900.0	6,305.7
Cost and expenses ⁽¹⁾	(35,706.3)	(40,654.5)	(43,055.2)	(6,184.4)
Segment results⁽²⁾	3,290.9	3,496.4	844.8	121.3
<i>Primary aluminum:</i>				
Revenues	47,245.7	53,802.2	49,089.0	7,051.2
Cost and expenses ⁽¹⁾	(46,419.1)	(54,731.5)	(48,401.8)	(6,952.5)
Segment results⁽²⁾	826.6	(929.3)	687.2	98.7
<i>Trading:</i>				
Revenues	146,856.9	142,017.8	158,686.3	22,793.9
Cost and expenses ⁽¹⁾	(146,123.0)	(141,277.3)	(157,733.5)	(22,657.0)
Segment results⁽²⁾	733.9	740.5	952.8	136.9
<i>Energy:</i>				
Revenues	6,251.0	7,235.3	7,345.9	1,055.2
Cost and expenses ⁽¹⁾	(6,422.3)	(7,209.3)	(6,942.4)	(997.2)
Segment results⁽²⁾	(171.3)	26.0	403.5	58.0
<i>Corporate and others</i>				
Revenues	645.3	667.2	493.0	70.8
Cost and expenses ⁽¹⁾	(2,373.9)	(1,934.3)	(1,480.7)	(212.7)
Segment results⁽²⁾	(1,728.6)	(1,267.1)	(987.7)	(141.9)
Elimination ⁽³⁾	97.7	198.0	213.2	30.6
Total profit before income tax	3,049.2	2,264.5	2,113.8	303.6

- (1) Consist of cost of sales, operating expenses, other income, other gains, finance income, finance costs and others attributable to each segment.
(2) Segment results refer to profit before income tax.
(3) Elimination refers to the aggregate inter-segment eliminations of segment results of each segment.

Year Ended December 31, 2019 Compared with Year Ended December 31, 2018

Alumina Segment

Revenues. Total revenue generated by the alumina segment slightly decreased from RMB44,150.9 million for the year ended December 31, 2018, to RMB43,900.0 million for the year ended December 31, 2019, primarily due to the decrease in the sales prices of the external sales of alumina.

Revenue from external sales of the alumina segment decreased by 2.9% from RMB14,758.4 million for the year ended December 31, 2018, to RMB14,326.6 million for the year ended December 31, 2019, primarily due to the decrease in the sales prices of the external sales of alumina.

Revenue from inter-segment sales of the alumina segment remained stable from RMB29,392.5 million for the year ended December 31, 2018, to RMB29,573.4 million for the year ended December 31, 2019.

Cost and expenses. The total cost and expenses for our alumina segment increased by 5.9% from RMB40,654.5 million for the year ended December 31, 2018, to RMB43,055.2 million for the year ended December 31, 2019, primarily due to the increase in costs of bauxite as we procured more bauxite from external suppliers in 2019 and the losses from disposal of production facilities in Guizhou branch.

Segment results. The segment profit for our alumina segment decreased by 75.8% from RMB3,496.4 million for the year ended December 31, 2018 to RMB844.8 million for the year ended December 31, 2019, primarily due to the increases in cost and expenses resulting from the increase in costs of bauxite as we procured more bauxite from external suppliers in 2019 and the losses from disposal of production facilities in Guizhou branch.

Primary Aluminum Segment

Revenues. Total revenue generated by the primary aluminum segment decreased by 8.8% from RMB53,802.2 million for the year ended December 31, 2018, to RMB49,089.0 million for the year ended December 31, 2019, primarily due to the decrease in output of primary aluminum as a result of production suspension of Shandong Huayu and production termination of Shanxi Huasheng.

Revenue from external sales of the primary aluminum segment decreased by 9.6% from RMB41,344.3 million for the year ended December 31, 2018, to RMB37,394.6 million for the year ended December 31, 2019, primarily due to the decrease in trading volume for external sales of primary aluminum as a result of production suspension of Shandong Huayu and production termination of Shanxi Huasheng.

Revenue from inter-segment sales of primary aluminum segment decreased by 6.1% from RMB12,457.9 million for the year ended December 31, 2018, to RMB11,694.4 million for the year ended December 31, 2019, primarily due to the decrease in trading volume for internal sales of primary aluminum as a result of production suspension of Shandong Huayu and production termination of Shanxi Huasheng.

Cost and expenses. The total cost and expenses for our primary aluminum segment decreased by 11.6% from RMB54,731.5 million for the year ended December 31, 2018, to RMB48,401.8 million for the year ended December 31, 2019, primarily due to the production suspension of Shandong Huayu and production termination of Shanxi Huasheng.

Segment results. We had a segment profit of RMB687.2 million for the year ended December 31, 2019, whereas we incurred a segment loss of RMB929.3 million for the year ended December 31, 2018. This was mainly due to the decreases in prices of carbon anodes and alumina used under the primary aluminum segment in 2019 by 11.5% and 4.5%, respectively, in comparison with 2018.

Trading Segment

Revenues. Total revenue generated by the trading segment increased by 11.7% from RMB142,017.8 million for the year ended December 31, 2018 to RMB158,686.3 million for the year ended December 31, 2019, primarily due to the increases in trading volumes for external sales of outsourced primary aluminum, alumina and charred coal in 2019 by 159.2%, 119.8% and 40.0%, respectively, in comparison with 2018, partially offset by the decrease in trading volume of other non-ferrous metal products, such as copper and zinc.

Revenue from external sales of the trading segment increased by 12.2% from RMB116,647.5 million for the year ended December 31, 2018 to RMB130,917.3 million for the year ended December 31, 2019, primarily due to the increases in trading volumes for external sales of outsourced primary aluminum, alumina and charred coal in 2019 by 159.2%, 119.8% and 40.0%, respectively, in comparison with 2018, partially offset by the decrease in trading volume of other non-ferrous metal products, such as copper and zinc.

Revenue from internal sales of the trading segment increased by 9.5% from RMB25,370.3 million for the year ended December 31, 2018 to RMB27,769.0 million for the year ended December 31, 2019, primarily due to the increase in internal sales of bauxite as we imported more bauxite from suppliers overseas in 2019.

Cost and expenses. The total cost and expenses for our trading segment increased by 11.6% from RMB141,277.3 million for the year ended December 31, 2018 to RMB157,733.5 million for the year ended December 31, 2019, primarily due to the increases in trading volumes for external sales of outsourced primary aluminum, alumina and charred coal in 2019 by 159.2%, 119.8% and 40.0%, respectively, in comparison with 2018, partially offset by the decrease in trading volume of other non-ferrous metal products, such as copper and zinc.

Segment results. Our segment profit increased by 28.7% from RMB740.5 million for the year ended December 31, 2018 to RMB952.8 million for the year ended December 31, 2019. This was mainly due to the increase in trading volume of charred coal, which is of a relatively high gross profit margin.

Energy Segment

Revenues. Total revenue generated by the energy segment increased by 1.5% from RMB7,235.3 million for the year ended December 31, 2018 to RMB7,345.9 million for the year ended December 31, 2019, remaining relatively stable.

Revenue from external sales of the energy segment increased by 1.0% from RMB7,037.0 million for the year ended December 31, 2018 to RMB7,109.8 million for the year ended December 31, 2019, remaining relatively stable.

Revenue from internal sales of the energy segment increased by 19.1% from RMB198.3 million for the year ended December 31, 2018 to RMB236.1 million for the year ended December 31, 2019, primarily due to increased sales of bauxite from a subsidiary in the energy segment to a company in the alumina segment.

Cost and expenses. The total cost and expenses for our energy segment decreased by 3.7% from RMB7,209.3 million for the year ended December 31, 2018 to RMB6,942.4 million for the year ended December 31, 2019, primarily due to the increases of share of profits of joint ventures and gains on disposal of associates, partially offset by the increase in the costs of coal.

Segment results. Our segment profit increased significantly from RMB26.0 million for the year ended December 31, 2018 to RMB403.5 million for the year ended December 31, 2019. This was mainly because the increases of share of profits of joint ventures and gains on disposal of associates, partially offset by the increase in the costs of coal.

Corporate and Other Operating Segment

Revenues. Revenue from the corporate and other operating segment decreased by 26.1% from RMB667.2 million for the year ended December 31, 2018 to RMB493.0 million for the year ended December 31, 2019, primarily due to decrease in maintenance service provided to primary aluminum enterprises resulting from the production suspension of Shandong Huayu and the production termination of Shanxi Huasheng.

Segment results. Our segment loss decreased by 22.1% from RMB1,267.1 million for the year ended December 31, 2018 to RMB987.7 million for the year ended December 31, 2019. This was mainly because the increase in gains from our investment in Yunnan Aluminum and Yixin Aluminum.

Year Ended December 31, 2018 Compared with Year Ended December 31, 2017

Alumina Segment

Revenues. Total revenue generated by the alumina segment increased by 13.2% from RMB38,997.2 million for the year ended December 31, 2017, to RMB44,150.9 million for the year ended December 31, 2018, primarily due to increases in the sales price and trading volume of alumina in 2018 by 2.6% and 5.0%, respectively, in comparison with 2017.

Revenue from external sales of the alumina segment increased by 1.3% from RMB14,565.3 million for the year ended December 31, 2017, to RMB14,758.4 million for the year ended December 31, 2018, primarily due to increase in the sales prices of the external sales of alumina.

Revenue from inter-segment sales of the alumina segment increased by 20.3% from RMB24,431.9 million for the year ended December 31, 2017, to RMB29,392.5 million for the year ended December 31, 2018, primarily due to an increasing demand of alumina by our primary aluminum smelters resulting from the increase in target production volume of our primary aluminum segment in 2018.

Cost and expenses. The total cost and expenses for our alumina segment increased by 13.9% from RMB35,706.3 million for the year ended December 31, 2017, to RMB40,654.5 million for the year ended December 31, 2018, primarily due to the increase in trading volume of alumina.

Segment results. As a result of the foregoing, the segment profit for our alumina segment increased by 6.2% from RMB3,290.9 million for the year ended December 31, 2017 to RMB3,496.4 million for the year ended December 31, 2018.

Primary Aluminum Segment

Revenues. Total revenue generated by the primary aluminum segment increased by 13.9% from RMB47,245.7 million for the year ended December 31, 2017, to RMB53,802.2 million for the year ended December 31, 2018, primarily due to the increase in the trading volume of primary aluminum, partially offset by the decrease in the sales price of primary aluminum. In comparison with 2017, the trading volume and sales price of primary aluminum increased by 15.5% and decreased by 1.7%, respectively, in 2018.

Revenue from external sales of the primary aluminum segment increased by 13.1% from RMB36,552.0 million for the year ended December 31, 2017, to RMB41,344.3 million for the year ended December 31, 2018, primarily due to the increase in the trading volume for external sales of primary aluminum.

Revenue from inter-segment sales of primary aluminum segment increased by 16.5% from RMB10,693.7 million for the year ended December 31, 2017, to RMB12,457.9 million for the year ended December 31, 2018, primarily due to the increase in the trading volume for inter-segment sales of primary aluminum.

Cost and expenses. The total cost and expenses for our primary aluminum segment increased by 17.9% from RMB46,419.1 million for the year ended December 31, 2017, to RMB54,731.5 million for the year ended December 31, 2018, primarily due to the increase in the trading volume of primary aluminum. In addition, the increases in the purchase prices of alumina and anode also contributed to the increases in cost and expenses. In comparison with 2017, the purchase prices of alumina and anode increased by 3.5% and 11.5%, respectively, in 2018.

Segment results. We had a segment profit of RMB826.6 million for the year ended December 31, 2017, whereas we incurred a segment loss of RMB929.3 million for the year ended December 31, 2018. This was mainly attributable to the increases in purchase prices of alumina and anode and the decrease in the sales price of primary aluminum.

Trading Segment

Revenues. Total revenue generated by the trading segment decreased by 3.3% from RMB146,856.9 million for the year ended December 31, 2017 to RMB142,017.8 million for the year ended December 31, 2018, primarily due to the decrease in the revenue generated from the external sales of our trading segment.

Revenue from external sales of the trading segment decreased by 5.7% from RMB123,697.8 million for the year ended December 31, 2017 to RMB116,647.5 million for the year ended December 31, 2018, mainly due to conversion of certain trading segment subsidiaries making external sales or their businesses into joint ventures.

Revenue from internal sales of the trading segment increased by 9.5% from RMB23,159.1 million for the year ended December 31, 2017 to RMB25,370.3 million for the year ended December 31, 2018, primarily due to the increase in the inter-segment trading volume of alumina and primary aluminum as a result of the increase in target production volume of our primary aluminum segment.

Cost and expenses. The total cost and expenses for our trading segment decreased by 3.3% from RMB146,123.0 million for the year ended December 31, 2017 to RMB141,277.3 million for the year ended December 31, 2018, mainly due to the conversion of certain trading segment subsidiaries or their businesses into joint ventures.

Segment results. As a result of the foregoing, the segment profit for our trading segment remained stable from RMB733.9 million for the year ended December 31, 2017 to RMB740.5 million for the year ended December 31, 2018.

Energy Segment

Revenues. Total revenue generated by the energy segment increased by 15.7% from RMB6,251.0 million for the year ended December 31, 2017 to RMB7,235.3 million for the year ended December 31, 2018, primarily due to the increases in revenues of coal and electricity by 9.22% and 40.45%, respectively, in comparison with 2017.

Revenue from external sales of the energy segment increased by 22.7% from RMB5,733.7 million for the year ended December 31, 2017 to RMB7,037.0 million for the year ended December 31, 2018, primarily due to the increase in trading volume of electricity resulting from the acquisition of an electricity plant by Ningxia Energy in September 2017.

Revenue from internal sales of the energy segment decreased by 61.7% from RMB517.3 million for the year ended December 31, 2017 to RMB198.3 million for the year ended December 31, 2018, primarily due to a reduction of inter-company services provided by our energy segment subsidiaries and a decrease in the inter-segment trading volume of coals.

Cost and expenses. The total cost and expenses for our energy segment increased by 12.3% from RMB6,422.3 million for the year ended December 31, 2017 to RMB7,209.3 million for the year ended December 31, 2018, primarily due to the increase in trading volume of electricity.

Segment results. We recorded a segment loss of RMB171.3 million for the year ended December 31, 2017, whereas we had a segment profit of RMB26.0 million for the year ended December 31, 2018. This was mainly attributable to the increase in revenue generated from external sales of the energy segment following acquisition of a new electricity plant in September 2017.

Corporate and Other Operating Segment

Revenues. Revenue from the corporate and other operating segment remained stable from RMB645.3 million for the year ended December 31, 2017 to RMB667.2 million for the year ended December 31, 2018.

Segment results. The segment loss for our corporate and other operate segment decreased from RMB1,728.6 million for the year ended December 31, 2017 to RMB1,267.1 million for the year ended December 31, 2018, primarily due to gains resulted from the increase in our equity value in certain entities that were converted from joint ventures and associates to our subsidiaries during the year and were therefore re-measured in connection with such conversion.

B. Liquidity and Capital Resources

Historically, our primary sources of funding have been cash generated from operating activities, prepayments and deposits from customers, bank and other loans and proceeds from equity or notes and bonds offerings. Our primary uses of funds have been working capital for production, capital expenditures and repayments of short-term, medium-term and long-term borrowings.

As of December 31, 2019, our current assets amounted to RMB48,713.8 million, representing a decrease of 17.3% from RMB58,901.5 million as of December 31, 2018. This is mainly because we enhanced the efficiency and utilization of the working capital, resulting in the decrease in cash and cash equivalents. As of December 31, 2019, our restricted cash and time deposits and cash and cash equivalents balance amounted to RMB9,065.0 million, representing a decrease of 57.4% from RMB21,296.1 million as of December 31, 2018. As of December 31, 2019, our trade and notes receivable amounted to RMB7,393.1 million, representing a decrease of 8.8% from RMB8,104.0 million as of December 31, 2018.

As of December 31, 2019, our current liabilities amounted to RMB69,169.7 million, representing a decrease of 7.6% from RMB74,836.8 million as of December 31, 2018. This is mainly due to the decrease in short-term loans and borrowings resulting from the optimization of the maturity profile of our interest bearing liabilities.

As of December 31, 2019, our net current liabilities amounted to RMB20,456.0 million, representing an increase of 28.4% from RMB15,935.3 million as of December 31, 2018. As of December 31, 2019, our current ratio (current assets/current liabilities) was 0.70, compared with 0.79 as of December 31, 2018. Our quick ratio ((current assets - inventories - prepayments)/current liabilities) was 0.41 as of December 31, 2019, compared with 0.49 as of December 31, 2018.

We have considered our available sources of funds as follows:

- Our expected net cash inflows from operating activities in 2020;
- As of December 31, 2019, we had total banking facilities of approximately RMB167,431 million, of which RMB49,347 million had been utilized and unutilized banking facilities amounted to RMB118,084 million as of December 31, 2019, among which, banking facilities of approximately RMB108,360 million will be subject to renewal during the next 12 months from January 1, 2020. We are confident that all banking facilities can be renewed upon their expiration based on our past experience with banks and our good credit standing; and
- Other available sources of financing from banks and other financial institutions based on our good credit history.

We believe that we have adequate resources to continue in operational existence for the foreseeable future not less than 12 months from December 31, 2019. The Board therefore continues to adopt the going concern basis in preparing these financial statements.

Cash Flows and Working Capital

The following table sets forth a condensed summary of our statement of cash flows for the periods indicated:

	Year Ended December 31,			
	2017	2018	2019	2019
	RMB	RMB	RMB	US\$
	<i>(in millions)</i>			
Net cash flows generated from operating activities	13,207.1	13,032.1	12,473.5	1791.7
Net cash flows used in investing activities	(5,598.1)	(5,529.1)	(13,392.3)	(1923.7)
Net cash flows used in financing activities	(3,387.1)	(16,280.6)	(10,474.0)	(1504.5)
Net increase/(decrease) in cash and cash equivalents	4,221.9	(8,777.6)	(11,392.8)	(1636.5)

Net Cash Flows Generated from Operating Activities

For the year ended December 31, 2019, we had cash inflows before changes in working capital but after adjustment for non-cash items and non-operating cash items of RMB14,250.1 million and net cash generated from operating activities of RMB12,473.5 million. The adjustment primarily consisted of non-cash and non-operating activities items such as depreciation of property, plant and equipment of RMB7,094.7 million, finance cost of RMB4,921.2 million and depreciation of right-of-use assets of RMB1,075.8 million, outflows of RMB1,228.0 million for changes in working capital and outflows of income tax of RMB548.6 million. The outflows from changes in working capital consisted primarily of (i) a decrease in trade and notes payables of RMB1,385.1 million and (ii) an increase in trade and notes receivables of RMB1,050.9 million, and partially offset by (i) a decrease in inventories of RMB929.0 million and (ii) a decrease in restricted cash of RMB859.5 million.

For the year ended December 31, 2018, we had cash inflows before changes in working capital but after adjustment for non-cash items and non-operating cash items of RMB14,231.1 million and net cash generated from operating activities of RMB13,032.1 million. The adjustment primarily consisted of non-cash and non-operating activities items such as depreciation of property, plant and equipment of RMB7,499.3 million and finance cost of RMB4,882.5 million, and outflows of RMB251.3 million for changes in working capital and outflows of income tax of RMB947.7 million. The outflows from changes in working capital consisted primarily of (i) an increase in trade and notes receivables of RMB2,473.0 million and (ii) a decrease in other payables and accrued liabilities of RMB945.3 million, and partially offset by (i) a decrease in inventories of RMB1,194.5 million and (ii) a decrease in other current assets of RMB916.7 million.

For the year ended December 31, 2017, we had cash inflows before changes in working capital but after adjustment for non-cash items and non-operating cash items of RMB14,711.8 million and net cash generated from operating activities of RMB13,207.1 million. The adjustment primarily consisted of non-cash and non-operating activities items such as depreciation of property, plant and equipment of RMB6,554.8 million and finance cost of RMB5,203.4 million, outflows of RMB555.2 million for changes in working capital and outflows of income tax of RMB949.4 million. The outflows from changes in working capital consisted primarily of (i) an increase in inventories of RMB2,662.5 million and (ii) an increase in trade and notes receivables of RMB1,963.2 million, and partially offset by (i) an increase in other payables and accrued liabilities of RMB1,672.7 million, (ii) an increase in trade and notes payables of RMB1,601.0 million and (iii) a decrease in other current assets of RMB1,275.5 million.

Net Cash Flows Used in Investing Activities

The net cash flows used in investing activities increased significantly from RMB5,529.1 million for the year ended December 31, 2018 to RMB13,392.3 million for the year ended December 31, 2019, primarily due to the structured deposits we purchased for increasing return on our existing cash, and the increase in investment in project construction and associates. In 2017, we had net cash flows used in investing activities of RMB5,598.1 million.

Net Cash Flows Used in Financing Activities

The net cash flows used in financing activities decreased by 35.7% from RMB16,280.6 million for the year ended December 31, 2018 to RMB10,474.0 million for the year ended December 31, 2019, primarily due to the decrease in net repayment of our debts. Our net cash used in financing activities for the year ended December 31, 2019, consisted primarily of repayments of short-term and long-term loans of RMB66,105.4 million and repayments of bonds and notes of RMB22,400.0 million, partially offset by drawdown of short-term and long-term loans of RMB40,669.2 million, proceeds from issuance of short-term bonds and medium-term notes (net of issuance costs) of RMB37,965.4 million and proceeds from gold leasing arrangements of RMB6,921.9 million.

The net cash flows used in financing activities increased significantly from RMB3,387.1 million for the year ended December 31, 2017 to RMB16,280.6 million for the year ended December 31, 2018, mainly because we received capital injection from non-controlling shareholders in 2017 resulting from the Asset Restructuring and the net cash outflow from the proceeds and repayments of our major debts increased in 2018 as compared to 2017. Our net cash used in financing activities for the year ended December 31, 2018, consisted primarily of repayments of short-term and long-term loans of RMB70,560.7 million, repayments of bonds and notes of RMB21,815.0 million and repayments of gold leasing arrangement of RMB7,519.3 million, partially offset by drawdown of short-term and long-term loans of RMB76,899.6 million and proceeds from issuance of short-term bonds and medium-term notes (net of issuance costs) of RMB13,185.0 million.

Loans and Borrowings

During the past years, we engaged in debt financing to fund our operations and business expansion. As of December 31, 2018 and 2019, our gearing ratio (net debts/total capital attributable to owners of the parent as defined in Note 36.3 to our audited consolidated financial statements) was approximately 68% and 69%, respectively.

	As of December 31,		
	2018	2019	2019
	<i>RMB</i>	<i>RMB</i>	<i>US\$</i>
	<i>(in millions)</i>		
Short-term loans and borrowings			
Short-term bank and other loans	39,348.1	21,238.2	3,050.7
Short-term bonds, unsecured	500.0	9,331.5	1,340.4
Gold leasing arrangements	1,607.9	7,018.6	1,008.2
Current portion of lease liabilities	—	1,358.7	195.2
Current portion of finance lease payable	2,328.4	—	—
Current portion of medium-term notes	396.7	—	—
Current portion of long-term bank and other loans	3,384.4	3,339.7	479.7
Sub-total	47,565.5	42,286.7	6,074.2
Long-term loans and borrowings			
Finance lease payable	4,081.3	—	—
Lease liabilities	—	8,369.3	1,202.2
Long-term bank and other loans	46,140.7	38,835.9	5,578.4
Medium-term notes and bonds and long-term bonds and private placement notes	10,094.9	16,736.8	2,404.1
Less:			
Current portion of lease liabilities	—	(1,358.7)	(195.2)
Current portion of medium-term notes and long-term bonds	(396.7)	—	—
Current portion of long-term bank and other loans	(3,384.4)	(3,339.7)	(479.7)
Current portion of finance lease payable	(2,328.4)	—	—
Sub-total	54,207.4	59,243.6	8,509.8
Total borrowings	101,772.9	101,530.3	14,584.0
Less: Bank balances and cash	21,296.1	9,065.0	1,302.1
Net	80,476.8	92,465.3	13,281.9

Bank and Other Loans

The weighted average annual interest rate of short-term bank and other loans for the year end December 31, 2019 was 4.29%. Our short-term bank and other loans will mature within one year.

The weighted average annual interest rate of long-term bank and other loans for the years ended December 31, 2019 was 5.20%. The following table sets forth the aggregate maturities of our outstanding long-term bank and other loans as of December 31, 2019:

	As of December 31, 2019	
	<i>RMB</i>	<i>US\$</i>
	<i>(in millions)</i>	
Within 1 year	3,339.7	479.7
Between 1 and 2 years	7,525.8	1,081.0
Between 2 and 5 years	9,159.0	1,315.6
Over 5 years	18,811.4	2,702.1
Total	38,835.9	5,578.4

As of December 31, 2019, we had secured loans of RMB13,719.7 million (including long-term and short-term loans). As of December 31, 2019, long-term loans and borrowings amounting to RMB11,474 million (current portion of RMB1,209 million and non-current portion of RMB10,265 million) were secured by the contractual right to charge users for electricity generated in the future and no short-term loans and borrowings were secured by letters of credit.

As of December 31, 2019, we had foreign currency denominated loans with a principal amount of RMB17 million in Japanese Yen and RMB4,006 million in U.S. dollars.

Notes and Bonds

The following table sets forth the face value, maturity, effective interest rate and outstanding amount of our outstanding long-term bonds and medium-term notes as of December 31, 2019:

	<u>Face value/maturity</u>	<u>Effective interest rate</u>	<u>December 31, 2019</u>
	<i>(RMB in thousands)</i>		
2018 Medium-term notes	2,000,000/2021	5.84%	1,992,339
2019 Medium-term bonds	2,000,000/2024	4.31%	1,982,228
2016 private placement notes	3,215,000/2019	5.12%	—
2018 Medium-term bonds	1,100,000/2021	4.66%	1,098,218
2018 Medium-term bonds	900,000/2023	5.06%	898,315
2018 Medium-term bonds	1,400,000/2021	4.30%	1,397,319
2018 Medium-term bonds	1,600,000/2023	4.57%	1,596,192
2019 Medium-term bonds	2,000,000/2022	3.84%	1,998,604
2019 Medium-term bonds	1,000,000/2022	3.50%	1,997,097
2019 Medium-term bonds	900,000/2023	4.99%	999,462
2018 Hong Kong Medium-term bonds	2,785,840/2021	5.25%	2,776,981
Total			16,736,755

The following table sets forth face value, maturity, effective interest rate and outstanding amount of our outstanding short-term bonds as of December 31, 2019:

	<u>Face value /maturity</u>	<u>Effective interest rate</u>	<u>December 31, 2019</u>
	<i>(RMB in thousands)</i>		
2018 Ningxia short-term bonds	500,000/2019	5.00%	—
2019 Ningxia short-term bonds	300,000/2020	3.97%	300,000
2019 short-term bonds	1,000,000/2020	2.45%	1,008,161
2019 short-term bonds	2,000,000/2020	2.63%	2,013,127
2019 short-term bonds	3,000,000/2020	2.00%	3,008,384
2019 short-term bonds	3,000,000/2020	2.30%	3,001,816
Total			9,331,488

Senior Perpetual Capital Securities

Please refer to “Item 4. Information on the Company - A. History and Development of the Company - Senior Perpetual Capital Securities Offering” for further details.

Restriction on Cash Dividends

Our PRC subsidiaries are required to set aside a certain amount of their retained profits each year, if any, to fund certain statutory reserves and these reserves may not be distributed as cash dividends. In addition, when our subsidiaries incur debts on their own behalf, the instruments governing the debt may restrict their ability to pay dividends or make other distributions to us. Our directors are of the view that we will continue to be able to meet our borrowing payment obligations as they fall due from cash generated from our operating activities.

Capital Expenditures and Capital Commitments

The following table sets forth our capital expenditures for the years ended 2017, 2018 and 2019, and the capital expenditures of each segment as a percentage of our total capital expenditures for the periods indicated:

	Year Ended December 31					
	2017		2018		2019	
	RMB	%	RMB	%	RMB	%
	<i>(in millions, except percentage)</i>					
Alumina	2,642.3	26.2	2,666.0	29.2	7,775.9	59.7
Primary aluminum	5,533.4	54.7	4,603.3	50.4	3,462.5	26.6
Trading	89.6	0.9	101.9	1.1	162.1	1.2
Energy	1,580.5	15.6	1,613.2	17.7	1,458.0	11.2
Corporate and others	262.2	2.6	144.0	1.6	166.0	1.3
Total	10,108.0	100.0	9,128.4	100.0	13,024.5	100.0

In 2019, we spent approximately RMB13,024.5 million of our capital expenditures (excluding equity interest investments) primarily in investments in construction, transformation and upgrading of projects, energy saving and consumption reduction, environmental governance, resources acquisition and technological research and development. Our total capital expenditure increased by 42.7% from 2018 to 2019, primarily due to our increased expenditures on project construction and expansion.

We expect our estimated capital expenditures in 2020 to be a total of approximately RMB13.9 billion, primarily for infrastructure and technology upgrading.

As of December 31, 2019, our Group's contractual but not provided capital commitment to fixed assets investment amounted to RMB4,041.9 million.

As of December 31, 2019, our commitments to make capital contribution to our associates and joint ventures amounted to RMB443.8 million, comprised of the capital contributions of RMB400 million to Chinalco Overseas Development Co., Ltd., RMB10.0 million to Loudi Zhongyu New Materials Co., Ltd., RMB27.8 million to Shanxi Qinlv Taiyue New Materials Co., Ltd. and RMB6.0 million to Chalco Tendering Company Limited, respectively.

We expect to use primarily operating cash flow in meeting such commitments with the shortfall to be satisfied by proceeds of bank loans, short-term and long-term bonds and medium-term notes.

C. Research and Development

For the years ended December 31, 2017, 2018 and 2019, our department of science and technology management has been responsible for organizing and coordinating the research and development efforts of the Company, and the Zhengzhou Institute, the only professional research institute in China dedicated to the research and development of aluminum smelting technologies, has been responsible for taking the lead in the research and development of important and key technologies for our operations and providing technology services for our plants. The technology centers at our plants focus on providing solutions for specific issues of each plant and applying our developed technologies. Each of the plants also has opportunities to participate in operational testing and pilot industrialization relating to research and development of important and key technologies. We also collaborate with universities and other research institutions in China on some of our complicated projects.

D. Trend Information

Other than as disclosed elsewhere in this annual report, we are not aware of any trends, uncertainties, demands, commitments or events for the period from January 1, 2019, to December 31, 2019, that are reasonably likely to have a material effect on our revenue, profitability, liquidity or capital resources, or that caused the disclosed financial information to be not necessarily indicative of future operating results or financial conditions.

E. Off-Balance-Sheet Arrangements

There are no off-balance sheet arrangements material to investors that have or are reasonably likely to have a current or future effect on our financial condition, our changes in financial condition, revenue or expenses, results of operations, liquidity, capital expenditures or capital resources.

F. Tabular Disclosure of Contractual Obligations

The following table summarizes our contractual obligations and commercial commitments for the periods indicated as of December 31, 2019:

	Payment due by period				
	Total	Within 1 year	1 to 2 years	2 to 5 years	Thereafter
	<i>(RMB in millions)</i>				
Lease liabilities, including current portion	14,547.5	1,729.9	1,106.7	1,333.8	10,377.1
Long-term bank and other loans, including current portion	38,835.9	3,339.7	7,525.8	9,159.0	18,811.4
Medium-term notes and bonds, including current portion	16,785.8	—	7,285.8	9,500.0	—
Short-term bonds	9,300.0	9,300.0	—	—	—
Gold leasing arrangement	6,921.9	6,921.9	—	—	—
Short-term bank and other loans	21,238.2	21,238.2	—	—	—
Interest payables for loans and borrowings	12,443.2	4,955.9	2,289.1	4,220.1	978.1
Financial liabilities at fair value through profit or loss	0.8	0.8	—	—	—
Financial liabilities included in other payables and accrued liabilities, excluding accrued interest	10,288.7	10,288.7	—	—	—
Financial liabilities included in other non-current liabilities	1,215.9	—	176.2	182.0	857.7
Trade and notes payables	12,584.8	12,584.8	—	—	—
Subtotal	144,162.7	70,359.9	18,383.6	24,394.9	31,024.3
Capital commitments on property, plant and equipment	4,041.9	N/A	N/A	N/A	N/A
Commitments for capital contribution	443.8	N/A	N/A	N/A	N/A
Total	148,648.4				

G. Safe Harbor

See “Forward-Looking Statements” at the beginning of this annual report.

Item 6. Directors, Senior Management and Employees

A. Directors and Senior Management

Directors

The seventh session of our Board currently consists of nine directors, including four executive directors, two non-executive directors and three independent non-executive directors. In accordance with our Articles of Association, our affairs are managed by our Board. The business address of each of our directors is No. 62 North Xizhimen Street, Hai Dian District, Beijing, People’s Republic of China, 100082.

We follow our home country practice in relation to the composition of our Board in reliance on the exemption provided under Section 303A.00 of the NYSE Corporate Governance Rules available to foreign private issuers. Our home country practice does not require a majority of directors of a listed company to be independent directors. As such, the majority of our directors are not independent within the meaning of NYSE Corporate Governance Rules.

The table and discussion below set forth information concerning our directors who served on our Board during the year ended December 31, 2019, and up to date of this annual report.

Name	Age	Positions with the Company
Executive Directors⁽¹⁾		
Lu Dongliang ⁽²⁾	46	Executive Director and Chairman of the Board
Yu Dehui ⁽³⁾	60	Executive Director and Chairman of the Board (resigned)
He Zhihui ⁽⁴⁾	57	Executive Director and President
Jiang Yinggang	56	Executive Director and Senior Vice President
Zhu Runzhou	55	Executive Director and Vice President
Non-executive Directors⁽⁵⁾		
Ao Hong	58	Non-executive Director
Wang Jun	54	Non-executive Director
Independent Non-executive Directors⁽⁶⁾		
Chen Lijie	65	Independent Non-executive Director
Hu Shihai	65	Independent Non-executive Director
Lie-A-Cheong Tai Chong, David	60	Independent Non-executive Director

- (1) On June 25, 2019, Mr. Lu Dongliang, Mr. He Zhihui, Mr. Jiang Yinggang and Mr. Zhu Runzhou were elected as executive Directors of the seventh session of the Board at the 2018 annual general meeting of the Company. As of the date of this annual report, we had four executive directors.
- (2) On February 21, 2019, Mr. Lu Dongliang was elected as the chairman of the sixth session of the Board and resigned from the position of the president of the Company. On June 25, 2019, Mr. Lu Dongliang was elected as the chairman of the seventh session of the Board.
- (3) On February 21, 2019, Mr. Yu Dehui resigned from the positions of the chairman of the Board and the executive director of the Company and from all other positions in each of the special committees under the Board.
- (4) On February 21, 2019, Mr. He Zhihui was appointed by the Board as the president of the Company. On April 29, 2019, he was elected as an executive director of the sixth session of the Board at the 2019 second extraordinary general meeting of the Company.
- (5) On June 25, 2019, Mr. Ao Hong and Mr. Wang Jun were elected as non-executive Directors of the seventh session of the Board at the 2018 annual general meeting of the Company. As of the date of this annual report, we had two non-executive directors.
- (6) On June 25, 2019, Ms. Chen Lijie, Mr. Hu Shihai and Mr. Lie-A-Cheong Tai Chong, David were elected as independent non-executive Directors of the seventh session of the Board at the 2018 annual general meeting of the Company. As of the date of this annual report, we had three independent non-executive directors.

Executive Directors

Lu Dongliang, aged 46, is currently an executive director and the chairman of the Board. Mr. Lu graduated from North China University of Technology majoring in accounting. He holds a bachelor's degree in economics and is an accountant. Mr. Lu has more than 20 years of work experience in financial management and in the non-ferrous metals industry. He successively served as the cadre in the audit department of China Nonferrous Metals Industry Corporation, the officer-in-charge of the capital division of the finance department of China Copper Lead & Zinc Group Corporation, the head of the accounting division and the capital division of the finance department of Chinalco, the deputy manager and manager of the treasure management division of the finance department, the manager of the general management office, the deputy general manager and general manager of the finance department of the Company, the chief financial officer of Chalco Gansu Aluminum Electricity Co., Ltd., the assistant to the president of the Company and the general manager of Lanzhou branch of the Company, an executive director and president of Chalco Gansu Aluminum Electricity Co., Ltd., and an Executive Director, senior vice president and president of the Company. Currently, Mr. Lu also serves as the deputy general manager of Chinalco.

He Zhihui, aged 57, is currently an executive director and the president of the Company. Mr. He graduated from Huazhong Institute of Technology with a master's degree in engineering and is a senior engineer with outstanding performance. Mr. He served as an engineer and a deputy director of the power control office, the head of the electric automation institution and the dean of the electric automation branch of Guiyang Aluminum Magnesium Design & Research Institute, the deputy dean and dean of Guiyang Aluminum Magnesium Design & Research Institute, the deputy general manager and general manager of China Aluminum International Engineering Co., Ltd., the chairman of China Nonferrous Metals Processing Technology Co., Ltd. and the secretary of the Communist Party Committee, chairman, executive director, president and chairman of the labor union of China Aluminum International Engineering Corporation Limited. Currently, Mr. He also serves as an assistant to the general manager of Chinalco.

Jiang Yinggang, aged 56, is currently an executive director and a senior vice president of the Company. Graduating from Central South University of Mining and Metallurgy majoring in the metallurgy of nonferrous metals, Mr. Jiang holds a master's degree in metallurgy engineering of non-ferrous metals and is a professor-grade senior engineer. Mr. Jiang has long been engaged in production operation and corporate management of production enterprises and has extensive and professional experience. He formerly served as deputy head and then head of the Corporate Management Department of Qinghai Aluminum Plant, head of Qinghai Aluminum Smelter, deputy manager and manager of Qinghai Aluminum Company Limited, general manager of the Qinghai branch of the Company, and an executive director and a vice president of the Company.

Zhu Runzhou, aged 55, is currently an executive director and a vice president of the Company. Mr. Zhu graduated from Wuhan University, majoring in software engineering, with a master's degree in engineering. He is a senior engineer of outstanding performance. Mr. Zhu has extensive experience in energy, technologies on power plants and corporate operation and management. He had successively served as the inspection director, operation director and director of the fuel division of Gansu Jingyuan Power Plant, the deputy chief engineer, director of the inspection department and director of the first repairing department of Gansu Jingyuan Power Plant as well as the manager of Huaming Branch of Gansu Guangming Supervisory Engineering Company. Mr. Zhu also served as the chairman of the labor union, the standing director of the employee stock holding committee and the deputy general manager of Gansu Jingyuan First Power Co., Ltd., the chairman of Baiyin Huadian Water Supply Co., Ltd., head of Guodian Kaili Power Plant, director of the preparatory office of the technical transformation program of Guodian in Duyun City, deputy general manager of Guodian Guizhou Branch, deputy general manager of Guodian Yunnan Branch and general manager of Guodian Power Xuanwei Power Generation Co., Ltd., deputy general manager and general manager of Guodian Guangxi Branch, deputy general manager of the energy management department of the Company and deputy general manager of Chalco Energy, a director, the general manager and the chairman of Ningxia Energy, and the general manager of Chalco Xinjiang Aluminum Power Co., Ltd.

Non-Executive Directors

Ao Hong, aged 58, currently serves as a non-executive director on our Board. Mr. Ao graduated from Central South University with a doctoral degree in management science and engineering. He is a professor-grade senior engineer with over 30 years of work experience in enterprises of non-ferrous metals industry. He successively served as the deputy dean of Beijing General Research Institute for Non-ferrous Metals and concurrently the chairman of GRINM Semiconductor Materials Co., Ltd., the chairman of Guorui Electronics Co., Ltd., the chairman of Guo Jing Micro-electronic Holding, Limited in Hong Kong, a deputy general manager of Chinalco. During this period, he also successively served as the chairman of the supervisory committee of the Company, chairman of the labor union of Chinalco, the dean of Chinalco Research Institute of Science and Technology and the chairman of China Rare Earth Co., Ltd. and an executive director and president of the Company. Mr. Ao is currently the full-time deputy secretary of the Communist Party Committee and a director of Chinalco.

Wang Jun, aged 54, has been serving as a non-executive director on our Board since June 27, 2013. Mr. Wang graduated from Huazhong Institute of Engineering with a degree of industrial and civil construction. He is an engineer. He has extensive experience in financial and corporate management. Mr. Wang formerly served as an engineer in the engineering department of Babcock & Wilcox Beijing Company Ltd., deputy manager of the real estate development department of China Yanxing Company, senior deputy manager of the equity management department, and senior manager of the business management department, senior manager, deputy general manager and general manager of the custody and settlement department in China Cinda Asset Management Co., Ltd. and general manager of the equity management department of China Cinda Asset Management Co. Ltd. Mr. Wang currently serves as the business director of China Cinda Asset Management Co., Ltd.

Independent Non-Executive Directors

Chen Lijie, aged 65, has been serving as an independent non-executive director on our Board since February 26, 2015. Ms. Chen graduated from Renmin University of China Law School and obtained a doctoral degree in Laws. Ms. Chen Lijie has more than 30 years of experience in law. She successively acted as director and deputy director of Commercial Affairs of the Office of Legislative Affairs of the State Council, deputy director of Department of Policies and Laws of the National Economic and Trade Commission, patrol officer of Bureau of Policies, Laws and Regulations of SASAC and chief legal consultant of China Mobile Communications Corporation.

Hu Shihai, aged 65, has been serving as an independent non-executive director on our Board since June 25, 2015. Mr. Hu graduated from Shanghai Jiao Tong University majoring in thermal energy engineering. He is a professor-level senior engineer with more than 40 years of working experience in the power industry. Mr. Hu has extensive experience in corporate management and technical management and successively served as the supervisor, director and deputy head of the Huaneng Shanghai Shidongkou No. 2 Power Plant, deputy director of the preparatory office of the Shanghai Waigaoqiao No. 2 Power Plant, manager of the production department and assistant to the general manager of Huaneng Power International, Inc. and assistant to the general manager and director of the safety production department, and chief engineer of China Huaneng Group.

Lie-A-Cheong Tai Chong, David, aged 60, has been serving as an independent non-executive director on our Board since December 29, 2015. He is honored with the Silver Bauhinia Star (SBS), Officier de l'Ordre National du Merite and Justice of Peace. Mr. Lie is the executive chairman of Newpower International (Holdings) Co., Ltd. and China Concept Consulting Ltd. He was selected as a member of the National Committee of the 8th, 9th, 10th and 11th Chinese People's Political Consultative Conference since 1993. From 2007 to 2013, he acted as a panel convener cum member of the Financial Reporting Review Panel of Hong Kong Special Administrative Region ("HKSAR"). Mr. Lie is currently the honorary consul of the Hashemite Kingdom of Jordan in the HKSAR, the chairman of the Hong Kong-Taiwan Economic and Cultural Cooperation and Promotion Council, a member of the Commission on Strategic Development of the HKSAR, a standing committee member of the China Overseas Friendship Association, a standing director of China Council for the Promotion of Peaceful National Reunification, and a member of the Hong Kong General Chamber of Commerce (HKGCC). Currently, Mr. Lie is also an independent non-executive director of Herald Holdings Limited and Harbor Center Development Limited, both of which are listed companies in Hong Kong.

Supervisors

Our supervisors are elected to represent our employees and shareholders and serve a term of three years or until the election of their respective successors, whichever is earlier. Our supervisors currently comprise Mr. Ye Guohua, Mr. Ou Xiaowu, Ms. Shan Shulan, Mr. Guan Xiaoguang and Mr. Yue Xuguang.

The table and discussion below set forth certain information concerning our supervisors who served on our supervisory committee during the year ended December 31, 2019, and up to the date of this annual report.

Name⁽¹⁾	Age	Positions with the Company
Ye Guohua ⁽²⁾	51	Chairman of Supervisory Committee
Wu Zuoming ⁽³⁾	53	Supervisor (expired)
Shan Shulan ⁽⁴⁾	48	Supervisor
Wang Jun ⁽⁵⁾	49	Supervisor (resigned)
Ou Xiaowu ⁽⁶⁾	55	Supervisor
Guan Xiaoguang ⁽⁷⁾	49	Supervisor
Yue Xuguang ⁽⁸⁾	56	Supervisor

(1) As of the date of this annual report, we had five supervisors.

(2) Mr. Ye Guohua was elected as a shareholder representative supervisor of the Company at the 2018 annual general meeting of the Company held on June 25, 2019 and, on the same day, was elected as the chairman of the seventh session of the supervisory committee of the Company at first meeting of the seventh session of the supervisory committee of the Company.

(3) The term of office of the sixth session of the supervisory committee of the Company that Mr. Wu Zuoming served as an employee representative supervisor of the Company expired on June 25, 2019, and Mr. Wu Zuoming no longer serves as a supervisor of the Company.

(4) Ms. Shan Shulan was elected as a shareholder representative supervisor of the sixth session of the supervisory committee of the Company at the 2019 first extraordinary general meeting of the Company held on February 20, 2019 and was elected as a shareholder representative supervisor of the seventh session of the supervisory committee of the Company at the 2018 annual general meeting of the Company held on June 25, 2019.

(5) Mr. Wang Jun resigned as a supervisor of the Company and was re-designated as the chief financial officer and the secretary to the Board on February 20, 2019.

(6) Mr. Ou Xiaowu was elected as a shareholder representative supervisor of the Company at the 2019 third extraordinary general meeting of the Company held on December 10, 2019.

(7) Mr. Guan Xiaoguang was elected as an employee representative supervisor of the Company at an employees' representatives meeting of the Company held on June 25, 2019.

(8) Mr. Yue Xuguang was elected as an employee representative supervisor of the Company at an employees' representatives meeting of the Company held on December 10, 2019.

Ye Guohua, aged 51, is currently the chairman of the supervisory committee of the Company. Mr. Ye graduated from Shanghai University of Finance and Economics, majoring in accounting, with a bachelor's degree in economics and is a senior accountant. Mr. Ye has extensive experience in financial management and accounting. He had successively served as the director of accounting department of the refinery of Shanghai Gaoqiao Petrochemical Company, the deputy chief accountant and head of accounting department of Sinopec Shanghai Gaoqiao Branch, the chief financial officer, executive director, a member of the Party Committee, deputy general manager of Sinopec Shanghai Petrochemical Company Limited, the director of accounting department of China Petroleum & Chemical Group Corporation, the chairman of Century Bright International Investment Company, the chairman of Sinopec Insurance Limited, the vice chairman of Taiping & Sinopec Financial Leasing Co., Ltd., a director of Sinopec Finance Co., Ltd., and a director of Sinopec Oilfield Service Corporation. Mr. Ye is also a member of the Communist Party Committee and the chief accountant of Chinalco.

Shan Shulan, aged 48, is currently a supervisor of the Company. Ms. Shan graduated from Beijing Institute of Light Industry, majoring in industrial corporate management, with a bachelor's degree in engineering. She is a certified public accountant and statistician. Ms. Shan has extensive experience in accounting, finance management and other fields. She successively served as an economic analyst at the economic research office of Beijing Glass Instruments Plant, the financial manager of Beijing CEMFIL Glass Fiber Co. Ltd. under Saint-Gobain in China, the financial manager for Beijing region of Carrefour (China) Co., Ltd., the financial manager for China region of Baker Hughes Centrilift, the financial manager for China region of Microsoft Research Asia (China), and the business director and deputy head of budget division and the head of budget assessment division of the finance department of Chinalco. Ms. Shan currently serves as the deputy director of the finance department of Chinalco. She also concurrently serves as a supervisor of Chinalco Innovative Development Investment Company Limited and a director of Aluminum Corporation of China Overseas Holdings Limited and China Aluminum Insurance Broker (Beijing) Co., Ltd.

Ou Xiaowu, aged 55, is currently a supervisor of the Company. Mr. Ou graduated from Xiamen University with a bachelor's degree in economics majoring in planning and statistics and is a senior auditor. Mr. Ou has extensive experience in auditing and financial management. He successively served as the deputy director and the director of the second division of the audit department and the director of the first division of the audit department in China Nonferrous Metals Industry Corporation, the deputy head of the finance department and the deputy head of the audit department of China Copper Lead & Zinc Group Corporation, the deputy general manager of our Guizhou branch, the deputy director and the director of the finance department (audit department) and the chief financial officer of the copper department of Chinalco and also served as a director and the chief financial officer of China Copper and the general manager of the finance department and audit department of the Company. Mr. Ou currently also acts as the deputy chief auditor and the director of the audit department of Chinalco, a supervisor of China Copper, a supervisor of China Aluminum International Engineering Corporation Limited, a supervisor of Chinalco High-end Manufacturing Co., Ltd., the chairman of the supervisory committee of Qinghai Yellow River Hydropower Renewable Aluminum Co., Ltd. and a supervisor of Chalco Energy.

Guan Xiaoguang, aged 49, is currently a supervisor of the Company. Mr. Guan holds a master's degree in business administration from Peking University. He is a senior economist with rich experience in human resources management and political work. Mr. Guan has successively served as a cadre of the personnel division and deputy secretary of the Youth League Committee of the North China University of Technology, deputy secretary of the Youth League Committee of the attached agencies directly under the China Nonferrous Metals Industry Corporation, deputy director and director of the Investment Management Office of the China Nonferrous Metals Industry Association, head of business and deputy director of the office of the expert advisory committee of Chinalco, manager of the talent development and training division of the human resources department of the Company, head and deputy director of the talent development and training division of the human resources department (veteran cadre work department) of Chinalco, deputy secretary of the Party committee, chairman of the labor union and supervisor of Shandong Aluminum Co., Ltd. and deputy general manager of the president's office (the office of the Party committee (discipline inspection commission)) of the Company. Mr. Guan currently also serves as the general manager of the president's office (the office of the Party committee (discipline inspection commission)) of the Company.

Yue Xuguang, aged 56, is currently a supervisor of the Company. Mr. Yue graduated from Kunming Institute of Technology with a bachelor degree in engineering majoring in mineral census and exploration. He is a senior economist. He has rich experience in human resources management. Mr. Yue has successively served as the deputy head of the coordination division of the labor insurance bureau and the head of the labor management division of the personnel and education department of China Nonferrous Metals Industry Corporation, the deputy head of the general division of the personnel office of State Bureau of Nonferrous Metal Industry (enjoying the head-level treatment), the deputy head of the personnel department of Chinalco, the head of the labor division of the personnel department of Chinalco, the manager of the remuneration management division of the human resources department of the Company, the head of the general division of the general office of Chinalco, the manager of the general division of the capital operating department of the Company, the deputy general manager of the human resources department of the Company, the deputy head (departmental head level) of the human resources department (veteran cadre work department) of Chinalco, the secretary of the party committee and deputy general manager of Chinalco Asset Operation and Management Co., Ltd. Mr. Yue currently also serves as the general manager of the human resources department of the Company.

Senior Management

The table and discussion below set forth certain information concerning other members of senior management during the year ended December 31, 2019, and up to the date of this annual report.

Name	Age	Positions with the Company
Wu Maosen ⁽¹⁾	56	Vice President
Tian Yong ⁽²⁾	60	Vice President (resigned)
Wang Jun ⁽³⁾	49	Chief Financial Officer and Secretary to the Board
Zhang Zhankui ⁽⁴⁾	61	Chief Financial Officer and Secretary to the Board (resigned)

- (1) On March 21, 2019, Mr. Wu Maosen was appointed at the 40th meeting of the sixth session of the Board as the vice president of the Company.
- (2) Mr. Tian Yong resigned from the position of the vice president of the Company due to reaching statutory retirement age on February 27, 2020.
- (3) On February 20, 2019, Mr. Wang Jun resigned as a supervisor of the Company and was re-designated as the chief financial officer and the secretary to the Board at the 38th meeting of the sixth session of the Board.
- (4) Mr. Zhang Zhankui resigned from the position of the chief financial officer and the secretary to the Board of the Company due to reaching statutory retirement age on February 20, 2019.

Wu Maosen, aged 56, is currently a vice president of the Company. Mr. Wu graduated from Dalian Railway College with a bachelor's degree in engineering, majoring in welding technology and equipment. He is a senior engineer with excellent performance. Mr. Wu has extensive experience in corporate management. He had successively served as the deputy head of the alumina branch, the deputy head of the overhauling branch and the director of the transport department of Shanxi Aluminum Plant, the assistant to the general manager of our Shanxi branch, the deputy commander-in-chief of the engineering and construction command department of Chalco Shanxi, a deputy general manager of Shanxi Huaze, the deputy head and head of Shanxi Aluminum Plant, a director and a general manager and the secretary of the Party Committee of Qinghai Huanghe Hydropower Regeneration Aluminum Co., Ltd., the secretary of the Party Committee, an executive director and general manager of Chalco Asset Operation and Management Company and successively served as an executive director of Chinalco Shanghai, an executive director and the general manager of Chalco Industrial Development Co., Ltd., the chairman of the board of Huaxi Aluminum, the chairman of the board and the general manager of Chalco Investment and Development Co., Ltd., the deputy team-leader of the team aiming at making up deficits and shaking off dilemma, transforming and upgrading of our Shanxi branch and Shanxi Aluminum Plant and the chairman and an executive director of the board of Chinalco Research Institute of Science and Technology Co., Ltd. Mr. Wu currently also serves as the deputy team-leader of the team aiming at making up deficits and shaking off dilemma, transforming and upgrading of our Shanxi branch and Shanxi Aluminum Plant.

Wang Jun, aged 49, resigned as a supervisor of the Company on February 20, 2019 and was appointed on the same day as, and currently is, the chief financial officer and secretary to the Board (company secretary) of the Company. Mr. Wang obtained a master's degree in business administration from Tsinghua University. He is a senior accountant and a member of the Chartered Institute of Management Accountants (CIMA). He has also been recognized as a national top accounting leading talent. Mr. Wang has worked in grassroots units, overseas companies, listed companies and various departments of the group, and has extensive experience in financial accounting, fund management and capital operation. Mr. Wang successively served as the deputy manager and manager of treasury management division of finance department of Chinalco, the general representative of the Peru office of Chinalco, a director and senior auditing manager of Minera Chinalco Perú S.A., the chief financial officer and the manager of finance department of Chinalco Resources Corporation, the chief financial officer of China Aluminum International Engineering Co., Ltd., an executive director, the chief financial officer and the secretary to the board of directors of China Aluminum International Engineering Corporation Limited, the deputy chief accountant, general manager of finance department and capital operating department of Chinalco and a supervisor of the Company. Mr. Wang is currently the chairman of the supervisory committee of China Rare Metals and Rare Earths Company Ltd. and a director of China Aluminum International Engineering Corporation Limited, Chinalco Capital Holdings Co., Ltd. and Chinalco Finance. He is also a director of Aluminum Corporation of China Overseas Holdings Limited.

B. Compensation

Executive Compensation

Executive directors are entitled to a director's fee, performance bonuses and welfare benefits provided under the relevant PRC laws and regulations. Non-executive directors are entitled only to a director's fees. In 2019, the aggregate amount of cash compensation paid by us to our directors, supervisors and other members of senior management for services performed in connection with their respective capacities above was approximately RMB3.6 million, RMB2.3 million and RMB2.5 million, respectively. Our executive directors and supervisors who are employees also receive compensation in forms including allowances, subsidies and medical care, maternity, unemployment, occupational injury and other benefits. None of the service contracts of our directors provide benefits to our directors upon their termination.

Details of the emoluments paid to our directors and supervisors during the year ended December 31, 2019 are as follows:

Name of Directors and Supervisors	Fees <i>RMB('000)</i>	Salary <i>RMB('000)</i>	Bonus <i>RMB('000)</i>	Pension <i>RMB('000)</i>	Total <i>RMB('000)</i>
<i>Directors</i>					
<i>Executive Directors</i>					
Yu Dehui	—	—	—	—	—
Lu Dongliang	—	—	—	—	—
He Zhihui	—	885	—	73	958
Jiang Yinggang	—	889	—	88	977
Zhu Runzhou	—	833	—	88	921
<i>Non-Executive Directors</i>					
Ao Hong	—	—	—	—	—
Wang Jun	150	—	—	—	150
<i>Independent Non-Executive Directors</i>					
Lie-A-Cheong Tai Chong, David	210	—	—	—	210

Name of Directors and Supervisors	Fees	Salary	Bonus	Pension	Total
	RMB('000)	RMB('000)	RMB('000)	RMB('000)	RMB('000)
Chen Lijie	210	—	—	—	210
Hu Shihai	210	—	—	—	210
Subtotal	780	2,607	—	249	3,636
Supervisors					
Ye Guohua	—	—	—	—	—
Shan Shulan	—	—	—	—	—
Guan Xiaoguang	—	710	—	88	798
Ou Xiaowu	—	—	—	—	—
Yue Xuguang	—	770	—	88	858
Wu Zuoming	—	578	—	88	666
Subtotal	—	2,058	—	264	2,322
Total	780	4,665	—	513	5,958

Senior Management Incentive System

In order to better provide incentives for our senior management and improve our shareholders' value, we adopted a special compensation system for our senior management designed to align our senior management's financial interests with our operating performance. Under this system, the senior management's compensation consists of the following components:

- basic salaries;
- performance bonuses;
- welfare benefits; and
- incentive bonuses.

C. Board Practices

Board of Directors

All of our directors and supervisors serve a term of three years or until such later date as their successors are elected or appointed. Directors and supervisors may serve consecutive terms. Each of our directors and supervisors has entered into a service contract with us, none of which can be terminated by us within one year without payment of compensation (other than statutory compensation). There were no arrangements providing for benefits upon termination of directors, supervisors or other senior management personnel. Two of the supervisors is an employee representative appointed by our employees and the rest are appointed by the shareholders. The following table sets forth the number of years our current directors and supervisors have held their positions and the expiration of their current term.

Name	Held Position Since	Expiration of Term
Lu Dongliang	June 28, 2016	June 30, 2022
He Zhihui	April 29, 2019	June 30, 2022
Jiang Yinggang	June 27, 2013	June 30, 2022
Zhu Runzhou	December 11, 2018	June 30, 2022
Ao Hong	February 13, 2018	June 30, 2022
Wang Jun	June 27, 2013	June 30, 2022
Chen Lijie	February 26, 2015	February 28, 2021
Hu Shihai	June 25, 2015	June 30, 2021
Lie-A-Cheong Tai Chong, David	December 29, 2015	December 31, 2021

Name	Held Position Since	Expiration of Term
Ye Guohua	December 11, 2018	June 30, 2022
Shan Shulan	February 20, 2019	June 30, 2022
Ou Xiaowu	December 10, 2019	June 30, 2022
Guan Xiaoguang	June 25, 2019	June 30, 2022
Yue Xuguang	December 10, 2019	June 30, 2022

Audit Committee

As at the date of this annual report, our audit committee consists of three independent non-executive directors, namely, Ms. Chen Lijie, Mr. Hu Shihai and Mr. Lie-A-Cheong Tai Chong, David. Mr. Lie-A-Cheong Tai Chong, David is the chairman of the audit committee.

The primary duties of our audit committee as set out in the committee charter include proposing to engage or replace the auditor, supervising our internal audit and its implementation, being responsible for the communication between the internal audit and external audit, auditing our financial information and its disclosure, reviewing the Company's financial control, internal control and risk management systems, studying on our other relevant professional matters, and putting forward suggestions for the decisions of the Board for reference.

Remuneration Committee

As at the date of this annual report, our remuneration committee consists of one non-executive director, namely Mr. Ao Hong, and two independent non-executive directors, namely Mr. Hu Shihai and Mr. Lie-A-Cheong Tai Chong, David. Mr. Hu Shihai is the chairman of the remuneration committee. The primary duties of our remuneration committee as set out in the committee charter include: preparing the remuneration management scheme and remuneration proposal for directors, employee-representative supervisors and senior management, and providing suggestions to the Board; preparing measures on performance evaluation of senior management, performance assessment procedures and relevant rewards and punishments, and providing suggestions to the Board; monitoring the implementation of the remuneration system of our Company; reviewing senior management's fulfilment of duties and conducting performance assessments; and other functions and authorities delegated by the Board. In 2019, the remuneration committee convened one meeting to consider and approve remuneration standards for 2019 for our directors, supervisors and other senior management members.

We follow our home country practice in relation to the composition of our remuneration committee in reliance on the exemption provided under NYSE Corporate Governance Rule 303A.00 available to foreign private issuers. Our home country practice does not require us to establish a remuneration committee which must be composed entirely of independent directors.

Nomination Committee

As at the date of this annual report, our nomination committee consists of two executive directors, namely Mr. Lu Dongliang and Mr. He Zihui, and three independent non-executive directors, namely Mr. Lie-A-Cheong Tai Chong, David, Mr. Hu Shihai and Ms. Chen Lijie. Mr. Lu Dongliang is the chairman of our nomination committee. The primary duties of our nomination committee as set out in the committee charter include: studying the selection standards and procedures for directors, senior management and members of special committees under the Board and providing suggestions to the Board; reviewing the qualification of candidates for directors, senior management and members of special committees under the Board and providing advice on inspection and appointment; assessing the independence of independent non-executive directors; and other functions and authorities delegated by the Board.

We follow our home country practice in relation to the composition of our nomination committee in reliance on the exemption provided under NYSE Corporate Governance Rule 303A.00 available to foreign private issuers. Our home country practice does not require us to establish a nomination committee which must be composed entirely of independent directors.

Development and Planning Committee

As at the date of this annual report, our development and planning committee consists of three executive directors, namely Mr. Lu Dongliang, Mr. He Zhihui and Mr. Zhu Runzhou, and one independent non-executive director, namely Mr. Hu Shihai. Mr. Lu Dongliang is the chairman of our development and planning committee. In accordance with the committee charter, the committee reviews and assesses our strategic plans for long-term development, fiscal budgeting, investment, business operations and investments returns.

Occupational Health and Safety and Environmental Committee

As at the date of this annual report, our occupational health and safety and environmental committee consists of two executive directors, namely Mr. Lu Dongliang and Mr. Jiang Yinggang, and one non-executive director, namely Mr. Wang Jun, with Mr. Jiang Yinggang as the chairman. This committee considers our annual planning on health, environmental protection and safety, supervises our implementation of the planning on health, environmental protection and safety initiatives, makes inquiries into serious incidents and inspects and supervises the handling of such incidents and makes recommendations to the Board on major decisions on health, environmental protection and safety.

Supervisory Committee

As at the date of this annual report, our supervisory committee consists of five supervisors, namely Mr. Ye Guohua, Mr. Ou Xiaowu and Ms. Shan Shulan as our shareholder representative supervisors and Mr. Guan Xiaoguang and Mr. Yue Xuguang as our employee representative supervisors.

Mr. Ye Guohua is the chairman of our supervisory committee. During 2019, Mr. Wang Jun was our shareholder representative supervisor and Mr. Wu Zuoming was our employee representative supervisor. Mr. Wang Jun resigned as a shareholder representative supervisor of the Company and was re-designated as the chief financial officer and the secretary to the Board of the Company on February 20, 2019. Mr. Wu Zuoming no longer serves as an employee representative supervisor of the Company due to the expiration on June 25, 2019 of the term of office of the sixth session of the supervisory committee of the Company that he served. The term of all members of the supervisory committee will expire upon the election of the eighth session of supervisory committee at the general meeting and employees' representatives meeting of the Company by the end of June 2022. The primary duties of our supervisory committee include: inspecting implementation of resolutions of the general meetings; inspecting legal compliance of our operations; inspecting our financial activities; inspecting the utilization of proceeds raised by us; inspecting the acquisitions and disposals of our assets; inspecting our connected transactions; and reviewing self-assessment report on internal control.

D. Employees

As of December 31, 2017, 2018 and 2019, we had 64,794, 65,211 and 65,507 employees, respectively. The number of our employees increased from 2018 to 2019, which was mainly due to increasing demand for human resources arising from our newly completed and ongoing projects. The table below sets forth the number of our employees by function and location as of the periods indicated:

Function	As of December 31,					
	2017		2018		2019	
		(%)		(%)		(%)
Alumina production	27,808	42.91	28,038	43.00	28,437	43.41
Primary aluminum production	23,648	36.50	23,630	36.24	22,189	33.87
Mining operation	2,657	4.10	2,700	4.14	3,996	6.10
Research and development	991	1.53	1,024	1.57	1,101	1.68
Sales and marketing	544	0.84	548	0.84	819	1.25
Energy	5,790	8.94	5,997	9.20	6,017	9.19
Management and others ⁽¹⁾	3,356	5.18	3,274	5.02	2,948	4.50
Total	64,794	100.00	65,211	100.0	65,507	100.0

(1) Excluding our management personnel for alumina production, and primary aluminum production.

Location	Employees	% of Total
<i>Shandong</i>	6,211	9.48
Chalco Shandong	5,799	8.85
Shandong Huayu	412	0.63
<i>Henan</i>	10,780	16.46
Chalco Mining	5,986	9.14
Zhongzhou Aluminum	4,129	6.30
Zhengzhou Institute	665	1.02
<i>Guizhou</i>	7,059	10.78
Guizhou Huajin	819	1.25
Guizhou branch	3,228	4.93
Zunyi Aluminum	2,238	3.42
Guizhou Huaren	774	1.18
<i>Guangxi</i>	2,705	4.13
Guangxi branch	2,705	4.13
<i>Shanxi</i>	12,455	19.01
Shanxi branch	2,619	4.00
Shanxi Huasheng	928	1.42
Shanxi New Material	6,432	9.82
Xinghua Technology	505	0.77
Shanxi Huaxing	910	1.39
Shanxi Zhongrun	1,061	1.62
<i>Gansu</i>	6,042	9.22
Lanzhou Aluminum	2,830	4.32
Gansu Hualu	1,162	1.77
Liancheng branch	2,050	3.13
<i>Liaoning</i>	1,333	2.03
Fushun Aluminum	1,333	2.03
<i>Qinghai</i>	3,351	5.12
Qinghai branch	3,351	5.12
<i>Chongqing</i>	69	0.11
Chongqing branch	69	0.11
<i>Inner Mongolia</i>	5,710	8.72
Baotou Aluminum	5,710	8.72
<i>Ningxia</i>	5,944	9.07
Ningxia Energy	5,944	9.07
<i>Shanghai</i>	332	0.51
Chalco Shanghai	25	0.04
Chalco Trading Group	307	0.47
<i>Beijing</i>	2,888	4.41
Chalco Materials	102	0.16
Chalco Energy	73	0.11
Chalco Logistics	2,713	4.14
<i>Others</i>	438	0.67
<i>Headquarters</i>	190	0.29
Total	65,507	100.00

We have workers' unions at the plant level that protect employees' rights and welfare benefits, organize educational programs, encourage employee participation in management decisions and mediate disputes between individual employees and us. All employees are union members. We have not experienced any strikes or other labor disturbances that have interfered with our operations and we believe that we maintain good relationships with our employees.

The remuneration package of our employees includes salary, bonuses, subsidies, allowances and medical care, housing subsidies, maternity, unemployment, occupational injury, retirement pension and other benefits.

In accordance with applicable PRC regulations, we participate in pension contribution plans organized by provincial and municipal governments, under which each of our plants is required to contribute an amount equal to a specified percentage of its employees' salaries, bonuses and various allowances. As the relevant PRC authorities adjusted the social insurance rate, the amount of contribution as a percentage of the employees' salary has been adjusted to approximately 16% from approximately 20% since May 1, 2019. We have made all required pension contributions up to December 31, 2019. Retirees who retired prior to the date of the reorganization will have their pensions paid out of the pension plans established by the PRC government. We provide to our employees various social welfare benefits through various institutions owned by Chinalco and its other affiliates or through third parties.

E. Share Ownership

As of the date of this annual report, the following directors, supervisors or senior management own an interest in shares of our Company:

<u>Name</u>	<u>Position</u>	<u>Share class</u>	<u>Number of shares</u>	<u>% of respective share class</u>
Jiang Yinggang	Executive Director and Senior Vice President	A Share	10,000	<0.1%

Item 7. Major Shareholders and Related Party Transactions

A. Major Shareholders

We are a joint stock limited company organized under the laws of the PRC. Our parent company, Chinalco, a state-owned enterprise, beneficially owns 32.06% of our outstanding ordinary Shares directly and indirectly through its controlled entities as of March 31, 2020. Chinalco holds a significant portion of our domestic shares in the form of state legal person shares, which do not have voting rights different from our other shares. Chinalco has substantial influence over our management, policies and corporate actions and can exercise all rights as our controlling shareholder subject to the relevant laws, rules and regulations. As of March 31, 2020, approximately 67.94% of our total outstanding ordinary Shares are held by public shareholders, of which 45.72% and 22.22% are owned by holders of A Shares and H Shares, respectively. The following table sets forth information regarding ownership of our issued and outstanding capital stock as of March 31, 2020. The table includes all persons who are known by us to own, either as beneficial owners or holders of record, 5% or more of any class of shares.

	<u>March 31, 2020⁽²⁾</u>		
	<u>Number of shares</u>	<u>% of respective share class</u>	<u>% of issued total share capital</u>
Holders of A Shares and H Shares⁽¹⁾			
Chinalco ⁽³⁾			
A Shares	5,295,895,019(L) ⁽⁴⁾	40.49(L)	31.11(L)
H Shares	162,276,000(L)	4.11(L)	0.95(L)
China Huarong Asset Management Co., Ltd. ⁽⁵⁾			
A Shares	841,600,264(L)	6.43(L)	4.94(L)
China Life Insurance (Group) Company ⁽⁶⁾			
A Shares	671,882,629(L)	5.14(L)	3.95(L)
JPMorgan Chase & Co. ⁽⁷⁾			
H Shares	351,880,809(L)	8.92(L)	2.07(L)
	29,697,146(S) ⁽⁸⁾	0.75(S)	0.17(S)
	302,276,258(P) ⁽⁹⁾	7.66(P)	1.78(P)
The Capital Group Companies, Inc. ⁽¹⁰⁾			
H Shares	275,175,500(L)	6.98(L)	1.62(L)

Holders of A Shares and H Shares ⁽¹⁾	March 31, 2020 ⁽²⁾		
	Number of shares	% of respective share class	% of issued total share capital
BlackRock, Inc. ⁽¹¹⁾			
H Shares	230,932,700(L)	5.86(L)	1.36(L)
	2,356,000(S)	0.06(S)	0.01(S)
Brown Brothers Harriman & Co.			
H Shares	199,817,327(L)	5.07(L)	1.17(L)
	199,817,327(P)	5.07(P)	1.17(P)
Citigroup Inc. ⁽¹²⁾			
H Shares	198,101,110(L)	5.02(L)	1.16(L)
	3,548,000(S)	0.08(S)	0.02(S)
	187,977,159(P)	4.76(P)	1.10(P)

- (1) Except for the information relating to Chinalco and China Huarong Asset Management Co., Ltd., information disclosed hereby is based on the information available on the website of the Hong Kong Stock Exchange at www.hkexnews.hk.
- (2) As at March 31, 2020, the total number of our A Shares was 13,078,706,983, the total number of our H Shares was 3,943,965,968, and the number of our total issued shares is 17,022,672,951 shares.
- (3) Including 5,050,376,970 A Shares directly held by Chinalco, an aggregate interest of 245,518,049 A Shares directly held by various controlled subsidiaries of Chinalco, comprising 238,377,795 A Shares held by Baotou Aluminum Group and 7,140,254 A Shares held by Chalco Shanxi Aluminum Co., Ltd. and an interest of 162,276,000 H Shares directly held by Aluminum Corporation of China Overseas Holdings Limited, a subsidiary of Chinalco.
- (4) The letter “L” denotes a long position.
- (5) These interests were held directly by Huarong Ruitong Equity Investment Management Co., Ltd. controlled by China Huarong Asset Management Co., Ltd.
- (6) These interests were held directly by China Life Insurance Company Limited controlled by China Life Insurance (Group) Company.
- (7) These interests were held directly by various corporations controlled by JP Morgan Chase & Co. Among the aggregate interests in the long position in H shares, 10,179,854 H shares were held as derivatives. Among the aggregate interests in the short position in H shares, 17,458,101 H shares were held as derivatives.
- (8) The letter “S” denotes a short position.
- (9) The letter “P” denotes a lending pool.
- (10) These interests were held directly by Capital Research and Management Company controlled by The Capital Group Companies, Inc.
- (11) These interests were held directly by various corporations controlled by BlackRock, Inc. Among the aggregate interests in the long position in H shares, 950,000 H shares were held as derivatives. Among the aggregate interests in the short position in H shares, 2,118,000 H shares were held as derivatives.
- (12) These interests were held directly by various corporations controlled by Citigroup Inc. Among the aggregate interests in the long position in H shares, 8,446,275 H shares were held as derivatives. Among the aggregate interests in the short position in H shares, 3,548,000 H shares were held as derivatives.

We are not aware of any arrangement that may on a subsequent date result in a change of control of Chalco. We have completed the Asset Restructuring through capital contributions by several investors to our subsidiaries and subsequent issuance of additional A Shares to these investors to purchase their entire stake in these subsidiaries. On February 25, 2019, we issued to the investors approximately 2.1 billion A Shares in aggregate, representing approximately 12.45% of the enlarged total issued share capital of the Company. See “Item 4. Information on the Company - A. History and Development of the Company - Subscription of Equity Interest of Certain Subsidiaries and Subsequent Issuance of Additional A Shares” for detailed information of the Asset Restructuring. For the period from June 25, 2018 to June 24, 2019, Chinalco increased its shareholding in the Company by 160,512,964 A shares and 115,276,000 H shares on a cumulative basis, representing approximately 0.94% and 0.68% of our total issued share capital as of June 24, 2019, respectively. See “Item 4. Information on the Company - A. History and Development of the Company - Controlling Shareholder’s Shareholding Increase in the Company” for detailed information of the shareholding increase.

As of March 31, 2020, there were 44 registered holders of ADRs evidencing 5,508,084 of our ADSs.

As an owner of at least 30% of our issued and outstanding shares, the parent company is deemed a controlling shareholder and therefore may not exercise its voting rights with respect to various matters related to our shares in a manner prejudicial to the interests of our other shareholders. See “Item 10. Additional Information - B. Memorandum and Articles of Association.” In accordance with our Articles of Association, each share of our capital stock has one vote and the shares of the same class have the same rights. Other than the foregoing restrictions, the voting rights of our major holders of domestic and H Shares are identical to those of any other holders of the same class of shares. Holders of domestic shares and H Shares are deemed to be shareholders of different classes for some matters, which may affect their respective interests. Other than the foregoing, holders of H Shares and domestic shares are entitled to the same voting rights.

B. Related Party Transactions

Connected Transactions under Hong Kong Listing Rules

Under the Listing Rules, transactions between connected persons and us, or connected transactions, generally must be reported to the Hong Kong Stock Exchange, announced to the public and/or approved by shareholders unless the foregoing requirements are waived by the Hong Kong Stock Exchange or exempted under the Listing Rules. Each year our independent non-executive directors must review our non-exempt continuing transactions and confirm that these transactions have been entered into:

- (i) in the ordinary and usual course of our business;
- (ii) with the terms of the transaction being fair and reasonable as far as our shareholders are concerned;
- (iii) either on normal commercial terms or, if there are not sufficient comparable transactions to judge whether they are on normal commercial terms, on terms no less favorable to us than terms available to or from (as appropriate) independent third parties; and
- (iv) in accordance with the relevant agreement governing them on terms that are fair and reasonable and in the interests of our shareholders as a whole.

Although the definition of connected transactions is not synonymous with the definition of related party transactions, the concepts are sufficiently similar that the description of our connected transactions would satisfy disclosure requirements under U.S. securities laws.

The following table sets forth the details of our major connected transactions for the year ended December 31, 2019.

<u>Agreement</u>	<u>Nature</u>	<u>Term/ Date of the Agreement</u>	<u>Transaction Amount in 2019</u> <i>(RMB in millions)</i>	<u>Cap for 2019</u> <i>(RMB in millions)</i>
Continuing Connected Transactions Comprehensive Social and Logistics Services Agreement (Counterparty: Chinalco)	Chinalco provides us with a broad range of social and logistics services including education and schooling, public transportation and property management.	The original agreement was entered on November 5, 2001, and expired on December 31, 2012. Pursuant to the supplementary agreement entered into in 2012, the term was renewed and expired on December 31, 2015. Pursuant to the supplementary agreement entered into in 2015, the term was renewed for three years from January 1, 2016 to December 31, 2018. Pursuant to the supplementary agreement entered into in 2018, the term was renewed for three years from January 1, 2019 to December 31, 2021.	309	Annual cap: 500

Agreement	Nature	Term/ Date of the Agreement	Transaction Amount in 2019 <i>(RMB in millions)</i>	Cap for 2019 <i>(RMB in millions)</i>
General Agreement on Mutual Provision of Production Supplies and Ancillary Services (Counterparty: Chinalco)	We purchase from Chinalco ancillary production supplies and services which include, among other things, various raw materials required in alumina and primary aluminum production, transportation and loading services and production supporting services.	The original agreement was entered on into November 5, 2001, and expired on December 31, 2012. Pursuant to the supplementary agreement entered into in 2012, the term was renewed and entered on December 31, 2015. Pursuant to the supplementary agreement entered into in 2015, the term was renewed for three years from January, 1 2016 to December 31, 2018. Pursuant to the supplementary agreement entered into in 2018, the term was renewed for three years from January 1, 2019 to December 31, 2021.	8,903	Annual cap for expenditure transactions: 14,100
	We provide Chinalco with products including, among other things, aluminum and alumina products, supporting services and ancillary production services.	On June 3, 2019, we and Chinalco entered into a supplemental agreement to revise the scope of mutual supply of products and include the pricing principles and methods of payment for the additional products subject to mutual supply.	14,300	Annual cap for revenue transactions: 28,400
Mineral Supply Agreement (Counterparty: Chinalco)	Chinalco provides us with bauxite and limestone from several mines that it operates. Chinalco must not provide bauxite and limestone to bauxite and limestone requirements.	The original agreement was entered on November 5, 2001, and expired on December 31, 2012. Pursuant to the supplementary agreement entered into in 2012, the term was renewed and expired in December 31, 2015. Pursuant to the supplementary agreement entered into in 2015, the term was renewed for three years from January 1, 2016 to December 31, 2018. Pursuant to the supplementary agreement entered into in 2018, the term was renewed for three years from January 1, 2019 to December 31, 2021.	22	Annual cap: 360

Agreement	Nature	Term/ Date of the Agreement	Transaction Amount in 2019 <i>(RMB in millions)</i>	Cap for 2019 <i>(RMB in millions)</i>
Provision of Engineering, Construction and Supervisory Services Agreement (Counterparty: Chinalco)	Chinalco provides us with certain engineering, construction and supervisory services at the state guidance price and, where there is no state guidance price, at market price. Such services are mainly provided by subsidiaries of Chinalco including China Aluminum International Engineering Corporation Limited.	The original agreement was entered on November 5, 2001, and expired on December 31, 2012. Pursuant to the supplementary agreement entered into in 2012, the term was renewed and expired on December 31, 2015. Pursuant to the supplementary agreement entered into in 2015, the term was renewed for three years from January 1, 2016 to December 31, 2018. Pursuant to the supplementary agreement entered into in 2018, the term was renewed for three years from January 1, 2019 to December 31, 2021.	2,950	Annual cap: 9,500
Land Use Rights Leasing Agreement (Counterparty: Chinalco)	Chinalco leases 470 parcels of land covering an aggregate area of approximately 61.2 million square meters and spanning across eight provinces in the PRC to us.	The original agreement was entered on November 5, 2001, for a term of 50 years, expiring on June 30, 2051.	437	Annual cap: 500
Fixed Assets Lease Framework Agreement (Counterparty: Chinalco)	We have agreed with Chinalco to provide leases to each other regarding buildings, constructions, machinery, apparatus, transportation facilities as well as equipment, appliance or tools and other fixed assets owned by either party in relation to production and operation.	The original agreement was entered into on April 28, 2015 and expired on December 31, 2018. Pursuant to the supplementary agreement entered into in 2018, the term was renewed for three years from January 1, 2019 to December 31, 2021.	62	Annual cap for expenditure transactions: 200
			53	Annual cap for revenue transactions: 100
Financial Services Agreement (Counterparty: Chinalco Finance)	Chinalco Finance has agreed with Chinalco to provide us with deposit services, credit services and miscellaneous financial services. We have the right to choose the financial institution for financial services and the financial institution for deposit services and loan services as well as the amounts of loans and deposits with reference to our own needs. Chinalco Finance undertakes that the terms for the provision of financial services to us at any time would be no less favorable than those of the same type of financial services provided by Chinalco Finance to Chinalco and other subsidiaries of Chinalco or those of the same type of financial services that may be provided to us by other financial institutions.	The original agreement expired on August 25, 2012, for a term of 1 year. Pursuant to the financial services agreement renewed on August 24, 2012, the term was extended and expired on August 25, 2015. Pursuant to the financial services agreement renewed on April 28, 2015, the term was renewed for a term of 3 years from August 26, 2015, and was amended and replaced as a whole by a new financial services agreement. The new financial services agreement was entered on October 26, 2017, for a term of 3 years, expiring on October 25, 2020.	3,285	Daily cap of deposit balance (including accrued interests): 12,000
			2,065	Daily cap of loan balance (including accrued interests): 15,000
			-	Other financial services: 50

Agreement	Nature	Term/ Date of the Agreement	Transaction Amount in 2019 <i>(RMB in millions)</i>	Cap for 2019 <i>(RMB in millions)</i>
Finance Lease Agreement (Counterparty: Chinalco Finance Lease Co., Ltd.)	Chinalco Finance Lease Co., Ltd. provides finance lease services to us.	The original finance lease framework agreement was entered into between the Company and Chinalco Lease on August 27, 2015, with a term from August 27, 2015, to December 31, 2016. A new finance lease framework agreement was entered into between the Company and Chinalco Lease on November 13, 2015, with a term of 3 years from January 1, 2016, to December 31, 2018. Pursuant to the supplementary agreement entered into in 2018, the term was renewed for three years from January 1, 2019 to December 31, 2021.	1,418	10,000
Factoring Cooperation Agreement (Counterparty: Chinalco Commercial Factoring (Tianjin) Co., Ltd.)	Chinalco Commercial Factoring (Tianjin) Co., Ltd. provides factoring financing services to the Company.	The original agreement was entered on September 27, 2017, and expired on December 31, 2018. Pursuant to the supplementary agreement entered into in 2018, the term was renewed for three years from January 1, 2019 to December 31, 2021.	158	3,000
Labor and Engineering Services Framework Agreement (Counterparty: Chalco Steering Intelligent Technology Co., Ltd.)	Chalco Steering Intelligent Technology Co., Ltd. provides us with engineering services and labor services which include, among other things, equipment repairs, intelligent industrial design and maintenance.	Pursuant to the agreement entered into on September 17, 2018, the term is from January 1, 2018 to December 31, 2020, for a term of three years.	36	Annual cap: 100

Agreement	Nature	Term/ Date of the Agreement	Transaction Amount in 2019 <i>(RMB in millions)</i>	Cap for 2019 <i>(RMB in millions)</i>
One-Off Connected Transactions⁽¹⁾				
Assets Transfer Agreement (Parties: Shanxi New Material and Chinalco Shanxi Aluminum Co., Ltd.)	Shanxi New Material acquired certain assets of Chinalco Shanxi Aluminum Co., Ltd.	January 30, 2019	177.2 (total consideration)	N/A
Capital Contribution Agreement (Parties: Chalco Trading Group, Chalco Logistics, Chinalco Commercial Factoring (Tianjin) Co., Ltd. and Chinalco Capital Holdings Co., Ltd.)	Each of Chalco Trading Group and Chalco Logistics made a capital contribution of RMB100 million in cash to Chinalco Commercial Factoring (Tianjin) Co., Ltd., respectively. Upon completion of the capital contribution, Chalco Trading Group, Chalco Logistics and Chinalco Capital Holdings Co., Ltd. owned approximately 17.2%, 17.2% and 65.6% equity interests of Commercial Factoring (Tianjin) Co., Ltd., respectively.	January 30, 2019	200 (capital contribution)	N/A
Capital Contribution Agreement (Counterparties: Chinalco Innovative Development Investment Company Limited and China Aluminum Nanhai Alloy Co., Ltd.)	We made a capital contribution to Chinalco Innovative Development Investment Company Limited with our 100% equity interests in China Aluminum Nanhai Alloy Co., Ltd. Upon completion of the capital contribution, we and Chinalco owned approximately 19.5% and 80.5% equity interests in Chinalco Innovative Development Investment Company Limited, respectively.	January 30, 2019	350.9 (appraised value of capital contribution)	N/A
Equity Transfer Agreements (Parties: Chalco Energy and Chinalco Environmental Protection and Energy Conservation Co., Ltd.)	Chalco Energy disposed its 40% equity interests in Inner Mongolia Fengrong Electricity Allocation and Sales Co., Ltd. and 60% equity interests in Ningxia Fenghao Electricity Allocation and Sales Co., Ltd. to Chinalco Environmental Protection and Energy Conservation Co., Ltd, respectively.	February 20, 2019	41.6 (total consideration)	N/A

Agreement	Nature	Term/ Date of the Agreement	Transaction Amount in 2019 <i>(RMB in millions)</i>	Cap for 2019 <i>(RMB in millions)</i>
Capital Contribution Agreement (Counterparties: Chinalco and Chinalco Capital Holdings Co., Ltd.)	We and Chinalco made respective capital contribution in cash to Chinalco Capital Holdings Co., Ltd. on a pro rata basis in accordance with their shareholdings thereof.	March 28, 2019	176.5 (our capital contribution); 1,023.5 (Chinalco's capital contribution)	N/A
Equity Transfer Agreement (Parties: Chalco Shanghai, China Nonferrous Metals Processing Technology Co., Ltd. and Suzhou Engineering & Research Institute for Nonferrous Metal Research Co., Ltd.)	Chalco Shanghai acquired 70% and 30% equity interests in Suzhou Nonferrous Metals Materials Science and Technical Development Co., Ltd. from China Nonferrous Metals Processing Technology Co., Ltd. and Suzhou Engineering & Research Institute for Nonferrous Metal Research Co., Ltd., respectively.	April 29, 2019	0.2 (total consideration)	N/A

- (1) See "Item 4. Information on the Company - A. History and Development of the Company - Subscription of Equity Interest of Certain Subsidiaries and Subsequent Issuance of Additional A Shares"; "- Transfer of Primary Aluminum Capacity Quota of Shanxi Huasheng"; "- Capital Contribution to China Rare Metals and Rare Earths Company Ltd. with Gallium Assets"; "- Subscription for A Shares of Yunnan Aluminum"; and "- Capital Contribution to Yixin Aluminum" for detailed information of other one-off connected transactions.

All transactions with related parties are conducted at prices and terms mutually agreed by the parties involved, which are determined as follows:

- (a) Sales of materials and finished goods comprised sales of alumina, primary aluminum, copper and scrap materials. Transactions entered into are covered by general agreements on mutual provision of production supplies and ancillary services. The pricing policy is summarized below:
- (1) The price prescribed by the PRC government ("State-prescribed price") is adopted;
 - (2) If there is no State-prescribed price, the price recommended in guidance issued by the PRC government ("State-guidance price") is adopted;
 - (3) If there is neither a State-prescribed price nor a State-guidance price, then the market price (being price charged to and from independent third parties) is adopted; and

- (4) If none of the above is available, then the adoption of a contractual price (being reasonable costs incurred in providing the relevant services plus not more than 5% of such costs is adopted).
- (b) Utility services, including electricity, gas, heat and water, are provided at State-prescribed prices.
- (c) Engineering, project construction and supervisory services were provided for our construction projects. The State-guidance price or prevailing market price (including the tender price where by way of tender) is adopted for pricing purposes.
- (d) The pricing policy for purchases of key and auxiliary materials (including bauxite, limestone, carbon, cement and coal) is the same as that set out in (i) above.
- (e) Social services and logistics services provided by Chinalco cover public security, fire services, education and training, school and hospital services, cultural and physical education, newspaper and magazines, broadcasting and printing as well as property management, environmental and hygiene, greenery, nurseries and kindergartens, sanatoriums, canteens and offices, public transport and retirement management and other services. Provisions of these services are covered by the Comprehensive Social and Logistics Services Agreement. The pricing policy is the same as that set out in (a) above.
- (f) Pursuant to the Land Use Rights Lease Agreements entered into between Chinalco and us, operating leases for industrial or commercial land are charged at the market rent rate. We also entered into a building rental agreement with Chinalco and pays rent based on the market rate for its lease of buildings owned by Chinalco.
- (g) Other services are environmental protection operation services. The prevailing market price is adopted for pricing purposes.
- (h) See Note 35(a) to our audited consolidated financial statements for more detailed information about our significant related party transactions.

During the years ended December 31, 2017, 2018 and 2019, our significant transactions with other state-owned enterprises (excluding Chinalco and its subsidiaries) constituted a large portion of our sales of goods and purchases of raw materials, electricity, property, plant and equipment and services. In addition, substantially all restricted cash, time deposits, cash and cash equivalents and borrowings as of December 31, 2017, 2018 and 2019 and the relevant interest earned or paid during the year are transacted with banks and other financial institutions which are controlled by the PRC government.

We provide the following additional information on significant related party transactions during the periods indicated based on Note 35 to our audited consolidated financial statements:

- (a) Significant related party transactions

	For the year ended December 31		
	2017	2018	2019
	<i>(RMB in thousands)</i>		
Sales of goods and services rendered:			
Sales of materials and finished goods to:			
Chinalco and its subsidiaries	10,658,507	11,248,625	13,612,817
Associates of Chinalco	682,992	897,642	514,414
Joint ventures	2,031,159	4,462,670	5,676,548
Associates	724,658	2,626,780	3,812,565
	<u>14,097,316</u>	<u>19,235,717</u>	<u>23,616,344</u>
Provision of utility services to:			
Chinalco and its subsidiaries	581,566	620,552	687,290

	For the year ended December 31		
	2017	2018	2019
	<i>(RMB in thousands)</i>		
Associates of Chinalco	8,776	15,719	4,062
Joint Ventures	118,280	186,672	263,436
Associates	1,122	24,309	35,650
	<u>709,744</u>	<u>847,252</u>	<u>990,438</u>
Provision of engineering, construction and supervisory services to:			
Chinalco and its subsidiaries	77,095	5,981	—
Joint ventures	2,046	—	—
Associates	—	1,725	—
	<u>79,141</u>	<u>7,706</u>	<u>—</u>
Rental revenue of land use rights and buildings from:			
Chinalco and its subsidiaries	40,875	31,551	52,571
Associates of Chinalco	—	—	65
Joint ventures	426	1,545	1,967
Associates	—	1,511	775
	<u>41,301</u>	<u>34,607</u>	<u>55,378</u>
Purchase of goods and services:			
Purchases of engineering, construction and supervisory services from:			
Chinalco and its subsidiaries	1,071,283	2,088,338	2,949,866
Joint ventures	—	2,100	69,332
Associates	134,072	405,993	218,616
	<u>1,205,355</u>	<u>2,496,431</u>	<u>3,237,814</u>
Purchases of key and auxiliary materials and finished goods from:			
Chinalco and its subsidiaries	3,850,073	3,513,420	8,161,223
Associates of Chinalco	—	18,917	18
Joint ventures	6,516,087	8,182,251	2,647,234
Associates	1,175	2,108,072	1,893,449
	<u>10,367,335</u>	<u>13,822,660</u>	<u>12,701,924</u>
Provision of social services and logistics services by: Chinalco and its subsidiaries	<u>326,830</u>	<u>312,062</u>	<u>309,180</u>
Provision of utilities services by:			
Chinalco and its subsidiaries	1,412,722	992,827	763,812
Associates of Chinalco	—	96,510	100,835
Joint Ventures	19,537	26,269	280,523
Associates	—	77,432	8,326
	<u>1,432,259</u>	<u>1,193,038</u>	<u>1,153,496</u>
Provision of other services by:			
A joint venture	269,204	226,280	272,220
Rental expenses for buildings and land use rights charged by: Chinalco and its subsidiaries	<u>509,848</u>	<u>501,866</u>	<u>499,191</u>
Other significant related party transactions:			
Borrowing from a subsidiary of Chinalco	4,010,000	6,525,000	3,890,000
Interest expense on borrowings, discounted notes and factoring arrangement from subsidiaries of Chinalco	225,934	143,415	141,991

	For the year ended December 31		
	2017	2018	2019
	<i>(RMB in thousands)</i>		
Entrusted loan and other borrowings to:			
Joint ventures	500,000	—	—
An associate	1,100,000	—	—
	1,600,000	—	—
Interest income on entrusted loan and other borrowings to:			
Joint ventures	41,005	—	—
An associate	24,425	—	—
	65,430	—	—
Interest income from the unpaid disposal proceeds from:			
Chinalco and its subsidiaries	117,587	—	—
Consideration to acquire the shares in the subsidiaries of Chinalco			
Investment to Yunnan Aluminum	—	—	1,287,608
Investment to Yixin Aluminum	—	—	850,000
	—	—	2,137,608
Disposal of electronic aluminum capacity quota to a subsidiary of Chinalco	—	—	800,000
Disposal of assets under a sale and leaseback contract to a subsidiary of Chinalco	600,000	224,000	500,000
Finance lease under a sale and leaseback contract from a subsidiary of Chinalco	600,036	224,000	558,924
Trade receivable factoring arrangement from a subsidiary of Chinalco	1,570,000	470,101	136,656
Discounted notes receivable to a subsidiary of Chinalco	523,253	756,000	679,517
Provision of financial guarantees to:			
Joint ventures	18,350	12,450	12,450
Financial guarantees provided by:			
Subsidiaries of Chinalco	4,000	—	—

(b) Balances with related parties

	As of December 31,	
	2018	2019
Cash and cash equivalents deposited with		
A subsidiary of Chinalco	9,101,541	3,285,093
Trade and notes receivables		
Chinalco and its subsidiaries	1,281,395	1,054,168
Associates of Chinalco	18,655	6,034
Joint ventures	819,878	788,183
Associates	6,615	25
	2,126,543	1,848,410
Provision for impairment of receivables	(77,657)	(17,815)
	2,048,886	1,830,595
Other current assets		
Chinalco and its subsidiaries	830,615	482,195
Joint ventures	1,424,678	1,503,505
Associates	29,701	47,743
	2,284,994	2,033,443
Provision for impairment of other current assets	(40,830)	(30,509)
	2,244,164	2,002,934

	As of December 31	
	2018	2019
Other non-current assets		
Associates	111,845	111,845
Interest-bearing loans and borrowings		
Subsidiaries of Chinalco (including lease liabilities)	4,373,033	9,857,187
Trade and notes payables		
Chinalco and its subsidiaries	404,278	334,840
Joint ventures	631,570	527,744
Associates	13,033	9,789
Associates of Chinalco	4,012	917
	<u>1,052,893</u>	<u>873,290</u>
Other payables and accrued liabilities		
Chinalco and its subsidiaries	1,930,947	1,810,514
Associates of Chinalco	17,128	17,056
Associates	148,978	80,012
Joint ventures	8,860	73,823
	<u>2,105,913</u>	<u>1,981,405</u>
Contract liabilities		
Chinalco and its subsidiaries	22,307	29,210
Associates of Chinalco	20	—
Associates	12,451	223
Joint ventures	94,367	56,010
	<u>129,145</u>	<u>85,443</u>

Guarantees

We provided guarantees to our related parties to guarantee their loans during the period from January 1, 2019 to March 31, 2020. The outstanding balance of the loans we guaranteed was RMB12.45 million as of March 31, 2020 and the largest amount outstanding of the loans we guaranteed during the period from January 1, 2019 to March 31, 2020 was RMB12.45 million. The interest rates on such loans range from 4.9% to 6.53% per annum.

Our related parties also provided guarantees to us to guarantee our loans during the period from January 1, 2019 to March 31, 2020. The outstanding balance of the loans guaranteed by our related parties was RMB218 million as of March 31, 2020 and the largest amount outstanding of the loans guaranteed by our related parties during the period from January 1, 2019 to March 31, 2020 was RMB218 million. The interest rate on such loan range from 6.4% to 6.4125% per annum.

Loans

We provided several entrusted loans to our related parties mainly for the purpose of supplementing working capital during the period from January 1, 2019 to March 31, 2020. The outstanding balance of such entrusted loans was mainly RMB675 million as of March 31, 2020 and the largest amount outstanding of the entrusted loans during the period from January 1, 2019 to March 31, 2020 was RMB675 million. The interest rates on such entrusted loans range from 4.3% to 10% per annum.

Our related party also provided several loans to us mainly for the purpose of supplementing working capital during the period from January 1, 2019 to March 31, 2020. The outstanding balance of such loans was RMB2.16 billion as of March 31, 2020 and the largest amount outstanding of the loans during the period from January 1, 2019 to March 31, 2020 was RMB4.14 billion. The interest rates on such loans range from 3.075% to 5.23% per annum.

C. *Interests of Experts and Counsel*

Not applicable.

Item 8. Financial Information

A. *Consolidated Statements and Other Financial Information*

We have appended our consolidated financial statements filed as part of this annual report on Form 20-F.

Legal Proceedings

We are not currently a party to any pending legal proceedings which are expected to have a significant effect on our financial position or results of operations, nor are we aware of any proceedings that are pending or threatened which may have a significant effect on our financial position or results of operations. We may from time to time become a party to various legal or administrative proceedings arising in the ordinary course of our business.

Dividend Policy

Under the Company Law of the PRC and our Articles of Association, all of our shareholders have equal rights to dividends and distributions. The holders of the H Shares share proportionately on a per share basis in all dividends and other distributions declared by our Board. Any final dividend for a fiscal year is subject to shareholders' approval. Cash dividends, if made, are declared in Renminbi with respect to H Shares on a per share basis and paid in HK dollars. The Bank of New York Mellon, as depositary, converts the HK dollar dividend payments and distributes them to holders of ADSs in U.S. dollars, less expenses of conversion.

We believe that our dividend policy strikes a balance between two important goals of providing our shareholders with a competitive return on investment and assuring sufficient reinvestment of profits to enable us to achieve our strategic objectives. The declaration of dividends is subject to the discretion of our Board, which takes into account the following factors:

- our financial results;
- capital requirements;
- contractual restrictions on the payment of dividends by us to our shareholders or by our subsidiaries to us;
- our shareholders' interests;
- the effect on our creditworthiness;
- general business conditions; and
- other factors our Board may deem relevant.

Under our current profit distribution policy as set forth in our Articles of Association, the basic principles of such policy include (i) giving adequate consideration to return to investors and making dividend to shareholders in an applicable percentage of the distributable profits, (ii) maintaining the continuity and stability of our dividend policy, while taking into consideration of our interests in the long term and the overall interests of all shareholders, as well as our sustainable development; and (iii) giving priority to dividend in cash.

More specifically, under such policy, we may make dividends in cash, in shares or in a combination of both cash and shares. Subject to conditions, we may make interim profit distributions. Save in exceptional circumstances, if our profit for the year and our cumulative undistributed profit are positive, we may make dividend in cash and (i) the profit to be distributed in cash per annum will not be less than 10% of the distributable profit realized for that year, or (ii) the total profit to be distributed in cash in the past three years will not be less than 30% of the average annual distributable profit realized in the past three years.

Pursuant to PRC laws and regulations, dividends may only be distributed after allowance has been made for: (1) recovery of losses, if any and (2) allocations to the statutory surplus reserve. The allocations to the statutory surplus reserve is 10% of our net profit determined in accordance with PRC Generally Accepted Accounting Principles, unless the accumulated statutory surplus reserve exceeds 50% of our registered share capital, in which case the surplus reserve is discretionary.

See “Item 10. Additional Information - E. Taxation” for a discussion of the tax consequences of receipt of dividends.

B. Significant Changes

Except as disclosed elsewhere in this annual report, we have not experienced any significant changes since the date of our audited consolidated financial statements which is included in this annual report.

Item 9. The Offer and Listing

Our A Shares are traded under the stock code “601600” in the Shanghai Stock Exchange, as our principal host market, while our H Shares are traded under the stock code “02600” in the Hong Kong Stock Exchange as the principal market for our H Shares. The ADSs have been issued by The Bank of New York Mellon, acting as depositary bank, and are listed on the New York Stock Exchange under the symbol “ACH” with each ADS representing 25 H Shares.

In connection with the proposed Asset Restructuring, the trading of A Shares of the Company on the Shanghai Stock Exchange was suspended from September 12, 2017 to February 25, 2018. For more information regarding the Asset Restructuring, see “Item 4. Information on the Company - A. History and Development of the Company - Subscription of Equity Interest of Certain Subsidiaries and Subsequent Issuance of Additional A Shares.”

Item 10. Additional Information

A. Share Capital

Not applicable.

B. Memorandum and Articles of Association

The following is a summary of certain provisions of our Articles of Association, as amended. Such summary does not purport to be complete. For further information, you and your advisors should refer to the text of our Articles of Association, as amended, and to the texts of applicable laws and regulations. A copy of our Articles of Association is filed as an exhibit to this annual report.

Our objects and purposes

Our Articles of Association as amended from time to time are filed with the Hong Kong Companies Registrar. Our business purpose and business scope can be found in Article 13 and Article 14, respectively, of our Articles of Association.

Directors’ power to vote on matters in which he or she has an interest

Under Article 174, a director shall not vote in any resolution of the board of directors for approving any contract, transaction or arrangement in which such director or any of his associates (as defined in the applicable rules governing the listing of securities amended from time to time) is materially interested, and shall not be counted into the quorum of the meeting either. Unless the interested director has disclosed his or her interest to the board of directors in accordance with the Article 174 and the contract, transaction or arrangement has been approved by the board of directors at a meeting in which the interested director is not counted in the quorum and has refrained from voting, a contract, transaction or arrangement in which such director is materially interested is voidable at the instance of our Company except as against a bona fide party thereto acting without notice of the breach of duty by such director. According to Article 86(2), matters concerning the remuneration of directors shall be decided by the shareholders’ general meeting.

Borrowing powers

Subject to compliance with applicable laws and regulations of the PRC, we have the power to raise and borrow money which power includes (without limitation) the issuance of debentures and the charging or mortgaging of part or whole of our business or properties and other rights permitted. The Articles of Association do not contain any specific provision in respect of the manner in which borrowing powers may be exercised by the directors nor do they contain any specific provision in respect of the manner in which such powers may be varied, other than (a) provisions which give the directors the power to formulate proposals for the issuance of debentures by us; (b) Article 87(2), which provides that the issuance of bonds must be approved by the shareholders in a general meeting by way of a special resolution; and (c) Article 112(4), which provides that the directors have the power to formulate our annual final financial budgets and final accounts.

Age limit for retirement

There is no provision pertaining to the retirement of directors pursuant to an age limit requirement in our Articles of Association.

Directors' qualifying shares

Under Article 107, the directors are not required to hold any qualifying shares.

Dividend rights

Article 55(1) provides that holders of our ordinary shares have the right to receive dividends and distribution of profits in other forms, in proportion to the number of shares held. Under Article 49, when we convene a shareholders' general meeting, distribute dividends, liquidate or perform other activities that require the verification of equity rights, the Board or the general meeting convener must specify a date as the record date. The shareholders registered in the shareholder register at closing on the record date are our shareholders entitled to appropriate rights and interests. Article 207 provides that under the premise of obeying the laws of the PRC, we have the right to forfeit the unclaimed dividends, subject to the expiry of the applicable relevant limitation period.

Voting rights

Article 55(2) provides that holders of our ordinary shares have the right to lawfully request, convene, chair, attend in person or appoint a proxy to attend and vote at shareholders' meetings in respect of the number of shares held. Each ordinary share is entitled to one vote on all matters submitted to a vote of our shareholders at all shareholders' meetings, except for (i) the cumulative voting system under Article 110; and (ii) meetings of a special class of shareholders where only holders of shares of the affected class are entitled to vote on the basis of one vote per share of the affected class, but Article 98 provides that interested shareholders shall not vote at class shareholders' meetings. Article 110 provides that in case that the our controlling shareholders' shareholding percentage is more than 30%, the cumulative voting system may be implemented for the election of directors and supervisors at a shareholders' general meeting.

A special resolution of the shareholders' general meeting will be required for important matters specified in Article 87, such as the increase or reduction of the registered capital and issuance of any class of shares, amendments to our Articles of Association, and our division, merger, dissolution and liquidation, and a special resolution must be adopted by shareholders in attendance (including proxies) at the meeting with supermajority votes as set forth in Article 80. For other matters to be approved in a shareholders' general meeting, an ordinary resolution as set forth in Article 80 will need to be adopted.

Rights to share profits

Article 61(7) provides that a plan for profit distribution and a plan for making up for losses formulated by the Board in accordance with Article 112(6) must be approved by way of the shareholders' general meeting.

Rights to share surplus in the event of liquidation

Article 55(6) provides that the holders of ordinary shares have the right to participate in the distribution of our surplus assets in proportion to the number of shares held in the event of the termination or liquidation of us. Article 228 sets forth the order of priority of payments out of our properties in the event of liquidation.

Enforceability of Shareholders' Rights

Our Articles of Association provide that, with certain limited exceptions, where disputes and claims which concern our affairs and are based on rights or obligations provided for in our Articles of Association, the Company Law of the PRC or other relevant laws arise between holders of H Shares and us, holders of A Shares, or our director, supervisor, general manager or other senior management staff, such disputes and claims must be submitted to arbitration. Chapter 23 of our Articles of Association sets forth further details of the dispute resolution procedure.

Redemption provisions; sinking fund provisions and liability to further capital calls

Article 30 provides that we may repurchase issued shares in compliance with the requirements provided in relevant PRC laws and regulations, regulatory requirements or the Articles of Association and with the approvals from the relevant governing authorities of PRC under the following circumstances: (1) reduction of our registered capital; (2) merger with another company which owns our shares; (3) use of shares for our employee shareholding scheme or as equity incentive; (4) shareholders disagreeing with our general meeting's resolution on merger or division and requiring us to acquire the shares in their possession; (5) use of shares for conversion of corporate bonds convertible into our shares; (6) where it is necessary to safeguard our value and the rights and interests of our shareholders; and (7) other circumstances required by law and administrative regulations. Under Articles 32 and 33, share repurchases by agreements outside a stock exchange are generally subject to our shareholders' approval. Under Article 33, share repurchases under the circumstances described in item (1), (2) and (3) above shall be resolved at the shareholders' general meeting, while share repurchases under the circumstances described in item (5) and (6) above shall be subject to approval by more than two-thirds of directors present at the meeting of the Board.

No securities issued by us are redeemable, entitled to a sinking fund or subject to liability for further capital calls.

Actions necessary to change the rights of holders of our shares or holders of a class of shares

Under Article 87(5), revision of any rights of class shareholders, e.g., rights to dividends, share profits or surplus in the event of liquidation or voting rights, requires a special resolution of the shareholders' general meeting. A special resolution must be adopted by shareholders in attendance (including proxies) at the meeting with supermajority votes as set forth in Article 80.

The rights attached to any class of shares may be varied or abrogated only with the sanction of a special resolution passed at the shareholders' general meeting and by holders of shares of the affected class passed at a separate general meeting of the class convened in accordance with Articles 97 to 102, respectively. The circumstances which are deemed to be a variation or abrogation of the class rights, including alternation of the number of shares of the class, are set forth under Article 97. Except for the circumstances under Article 97(1), (9) and (10), shareholders of the affected class, whether or not otherwise having the right to vote at shareholders' general meetings, have the right to vote at class meetings but interested shareholders (which is defined under Article 98) are not entitled to vote at class meetings.

Resolutions of a class meeting shall be passed by the required percentage of shares (as specified under Article 99) with voting rights held by the class shareholders who, according to Article 98, are entitled to vote at that class meeting. Written notice must be given to all shareholders who are registered as holders of that class in the register of shareholders 45 days (inclusive of date of meeting) before the date of the class meeting. Such notice must contain the matters to be considered at such meeting, the date and the place of meeting. Those shareholders of the class who intend to attend shall send the written reply to us 20 days before the class meeting according to Article 100.

The proceedings of class meetings shall be conducted as near as possible to those of shareholders' general meetings. The provisions in the Articles of Association relating to the proceedings of shareholders' general meetings shall apply to class meetings.

The special procedures for approval by a class of shareholders do not apply where we issue, upon approval by special resolution of shareholders in general meeting, either separately or concurrently once every 12 months, domestic shares and H Shares not more than 20% of the outstanding shares of the respective class.

Provisions discriminating against any existing or prospective shareholder as a result of owning a substantial number of shares

Chinalco, as our controlling shareholder (which is defined under Article 59), shall not exercise its voting rights in a manner prejudicial to the interest of all or some part of the shareholders when making decisions:

- to relieve a director or supervisor of his duty to act honestly in our best interest;
- to approve the expropriation by a director or supervisor (for his own benefit or for the benefit of another) of our assets, in any manner, including but not limited to an opportunity beneficial to us; or

- to approve the expropriation by a director or supervisor (for his own benefit or for the benefit of another) the individual rights of other shareholders, including but not limited to rights to distributions and voting rights save and except for our restructuring, submitted for approval by the shareholders in general meeting in accordance with the Articles of Association.

Conditions governing the manner in which annual general meetings and extraordinary general meetings of shareholders are convoked

Shareholders' general meetings can be held as annual general meetings or extraordinary general meetings. Annual general meetings are held once a year within six months after the end of the preceding fiscal year.

The Board is required to convene an extraordinary general meeting within two months of the occurrence of any of the following circumstances:

- (1) the number of directors falls below the number required by the Company Law of the PRC or two-thirds of the number required by the Articles of Association;
- (2) our unrecovered losses amount to one-third of the total amount of our paid-in-capital;
- (3) upon the request of shareholder(s) holding 10% or more of our shares for more than ninety consecutive days (the number of shares held shall be the figures as of the date of the written request from the shareholder); and
- (4) whenever the Board deems necessary or the supervisory committee proposes to convene the same.

We shall, within 45 days (inclusive of date of meeting) before the date of meeting, send written notices of the shareholders' general meeting and inform all registered shareholders of the matters to be considered at the meeting and the date and venue of the meeting. Those shareholders who intend to attend the meeting shall send the written reply to us 20 days before the meeting. The meeting may be held if the number of voting shares represented by the shareholders intending to attend the meeting meets the threshold prescribed under Article 66. Otherwise, we shall, within five days, inform the shareholders once again of the matters to be considered at, and the date and place of, the meeting in the form of a public announcement, after which we may hold the meeting. A meeting and the resolutions adopted thereat shall not be invalidated due to the accidental omission to give notice of the meeting to, or the non-receipt of notice of the meeting by, a person entitled to receive notice. Motions put forward at the general meeting shall be specific and shall relate to the matters to be considered at a shareholders' general meeting. Motions raised at a general meeting shall:

- (1) be free of conflicts with the provision of laws, administrative regulations and Articles of Association, and fall within our business scope and the terms of the reference of the shareholders' general meeting;
- (2) have definite topics to discuss and specific matters to resolve; and
- (3) be submitted in writing or served to the board of directors.

Limitations on the rights to own securities

Under Article 19, the shares issued to domestic investors and denominated in Renminbi are Domestic-Invested Shares whereas the shares issued to overseas investors and denominated in foreign currency are Foreign-Invested Shares. Unless otherwise approved or filings being completed according to PRC law, H Shares may generally be traded directly only among investors who are legal or natural persons resident outside of the PRC and may not be sold directly to investors resident within the PRC.

Provisions having an effect of delaying, deferring or preventing a change in control

Under Article 116, decisions in respect of market development, merger and acquisition, and investment in a new field, where the consideration to be paid or the assets to be acquired exceed 10% of our total assets, the Board is required to engage relevant professional consultants to provide professional opinions, which shall serve as the key reference for the decision of the Board concerning such investment, merger or acquisition.

Under Article 87(3), division, merger, dissolution and liquidation of us and material acquisitions and disposals by us must be approved by a special resolution at a shareholders' general meeting.

There are no provisions under the Articles of Association pertaining to the ownership threshold above which shareholder ownership must be disclosed.

Conditions governing changes in registered capital

Under Article 112(7), any proposal for the increase or decrease of our registered capital must be formulated by the Board. Article 87(1) further provides that any increase or reduction in share capital requires adoption of a special resolution at a shareholders' general meeting. In addition, according to Article 97, alternation of the number of shares of a class or of a different class having voting rights, distribution rights or other privileges equal or superior to such class is regarded as alternation or abolishment of rights of such class, and must satisfy the requirements for shareholders' meetings of the affected class. See "—Actions necessary to change the rights of holders of our shares or holders of a class of shares."

Certain Differences Between PRC Company Law and Delaware Corporate Law

We are a PRC joint stock company, which is a corporate entity organized under the Company Law of the PRC. The PRC company law differs from laws applicable to United States corporations and their shareholders. A description of securities registered under Section 12 of the Exchange Act is filed as Exhibit 2.4 to this annual report on Form 20-F and includes a summary of certain significant differences between the provisions of the PRC company law applicable to us and the comparable provisions of the laws applicable to companies incorporated in the United States and their shareholders (for this purpose we refer to Delaware corporate law). Such summary does not purport to be complete and is subject to and qualified in its entirety by reference to our Articles of Association, as amended, and to the relevant laws and regulations.

C. *Material Contracts*

For the two years immediately preceding the date of this annual report, we have not entered into any additional material contracts other than in the ordinary course of business and other than those described in "Item 4. Information on the Company - A. History and Development of the Company" and "Item 7. Major Shareholders and Related Party Transactions - B. Related Party Transactions."

D. *Exchange Controls*

The existing foreign exchange regulations have significantly reduced government foreign exchange controls for transactions under the current account, including trade and service-related foreign exchange transactions and payment of dividends. We may undertake current account foreign exchange transactions without prior approval from the SAFE by producing commercial documents evidencing such transactions, provided that they are processed through Chinese banks licensed to engage in foreign exchange transactions. The PRC government has stated publicly that it intends to make the Renminbi freely convertible in the future. However, we cannot predict whether the PRC government will continue its existing foreign exchange policy and when the PRC government will allow free conversion of Renminbi to foreign currency.

Foreign exchange transactions under the capital account, including principal payments in respect of foreign currency-denominated obligations, continue to be subject to significant foreign exchange controls and require the approval of the SAFE. These limitations could affect our ability to obtain foreign exchange through debt or equity financing, or to obtain foreign exchange for capital expenditures.

Since 1994, the conversion of Renminbi into HK and U.S. dollars has been based on rates set by the PBOC, which are set daily based on the previous day's PRC interbank foreign exchange market rate and current exchange rates on the world financial markets. From 1994 to July 20, 2005, the official exchange rate for the conversion of Renminbi to U.S. dollars was generally stable. On July 21, 2005, the PRC government introduced a managed floating exchange rate system to allow the value of the Renminbi to fluctuate within a regulated band based on market supply and demand and by reference to a basket of currencies. Since then, the PRC government has made, and may in the future make, further adjustments to the exchange rate system. In April 2012, the PRC government took a milestone step in turning the Renminbi into a global currency by doubling the size of its trading band against the U.S. dollar, pushing through a crucial reform that further liberalizes its financial markets. The PBOC allows the Renminbi to rise or fall 1% from a mid-point every day, effective April 16, 2012, compared with its previous 0.5% limit. The PBOC further allows the Renminbi to rise or fall 2% from a mid-point every day, effective March 17, 2014. In August 2015, the PBOC announced that the daily central parity quotes the market-makers reported to the China Foreign Exchange Trade System operated by the PBOC before the market opens should be based on the closing rate of the inter-bank foreign exchange rate market on the previous day, supply and demand in the market, and price movement of major currencies, effective on August 11, 2015. Fluctuations in exchange rates may adversely affect the value, translated or converted into U.S. dollars or HK dollars, of our net assets, earnings and any declared dividends. We cannot give any assurance that any future movements in the exchange rate of the Renminbi against the U.S. dollar and other foreign currencies will not adversely affect our results of operations and financial condition.

E. Taxation

PRC Taxation

The following summary of the material PRC and United States federal income tax provisions relating to the ownership and disposition of H Shares or ADSs held by the investor as capital assets is based upon laws and relevant interpretations thereof in effect as of the date of this annual report, all of which are subject to change, and does not constitute legal or tax advice. This summary does not deal with all possible tax consequences relating to an investment in our ordinary shares, such as the tax consequences under state, local and other tax laws.

Dividends Paid to Individual Investors

Any shares registered in the name of our depository bank will be deemed as being held by non-resident enterprise shareholders and the dividends attributable to the corresponding ADSs will be subject to the withholding of the PRC corporate income tax. We are therefore required to withhold 10% corporate income tax when we make dividend distributions to the investors of our ADSs. Investors of our ADSs will not be subject to further PRC individual income tax or PRC corporate income tax. The 10% dividend withholding tax rate is not subject to any reduction under the 1984 Agreement between the United States and the People's Republic of China for the Avoidance of Double Taxation, or the PRC Treaty.

Capital Gains

With respect to foreign enterprises which are established under the laws of non-PRC jurisdictions and have no establishment or residence in China or whose capital gains from China do not relate to their establishment or residence in China ("non-resident foreign enterprises"), according to the Enterprise Income Tax Law and its implementation rules, which became effective on January 1, 2008, capital gains realized by non-resident foreign enterprises are ordinarily subject to capital gains tax at the rate of 10%, unless exempted or reduced pursuant to an applicable double-taxation treaty or other exemptions. The capital gains realized by resident enterprises, including enterprises established under the laws of non-PRC jurisdictions but whose "de facto management body" is located in the PRC, upon the sales of overseas-listed shares are subject to the PRC enterprise income tax.

With respect to foreign individual investors, the Provisions for Implementation of Individual Income Tax Law of China, as amended, stipulated that individual income tax on gains realized on the sale of equity shares shall be regulated in separate rules to be drafted by the State Council of China. However, as of the date of this annual report, there are no such rules enacted by the State Council yet. On March 30, 1998, the MOF and the SAT jointly issued the "Circular of Taxation Regarding the Continued Exemption of Individual Income Taxes Levied on Income Obtained from the Transfer of Shares," which provided that income derived from the transfer of shares issued by listed companies shall not be taxed as income for the purposes of levying individual income taxes after July 1, 1997.

For PRC mainland investors, on October 31, 2014, the SAT issued "Circular on Tax Policies Relating to the Pilot Program of Shanghai-Hong Kong Stock Connect," which provided that any capital gain from transferring stocks listed on the Hong Kong Stock Exchange by a PRC mainland investor would not be subject to tax during the period from November 17, 2014 to November 16, 2017. For mainland enterprises, such capital gains would be included in its income and subject to income tax. On November 1, 2017, the MOF, the SAT and the CSRC jointly issued "Circular on Extending Individual Income Tax Policies Relating to the Shanghai-Hong Kong Stock Connect," which provided that income generated from price differences through investment in stocks listed on the Hong Kong Stock Exchange by PRC mainland individual investors via the Shanghai-Hong Kong Stock Connect would be exempt from individual income tax from November 17, 2017 to December 4, 2019. On December 4, 2019, the MOF, the SAT and the CSRC jointly issued the "Circular on Extending Individual Income Tax Policies Relating to the Shanghai-Hong Kong Stock Connect, Shenzhen-Hong Kong Stock Connect and Mainland-Hong Kong Mutual Recognition of Funds," which further exempts the individual income tax on income generated from transfer through investment in stocks listed on the Hong Kong Stock Exchange by PRC mainland individual investors via the Shanghai-Hong Kong Stock Connect or Shenzhen-Hong Kong Stock Connect and investment in Mainland-Hong Kong mutually recognized Funds from December 5, 2019 to December 31, 2022.

Tax Treaties

China currently has such treaties with more than one hundred countries and regions, including the following countries:

- the United States;
- Australia;
- Canada;
- France;
- Germany;
- Japan;
- Malaysia;
- Singapore;
- the United Kingdom; and
- the Netherlands.

Under most treaties, the rate of withholding tax imposed by China's taxation authorities remains 10%. The double taxation treaty between China and the United States provides that 10% withholding tax rate will be applied to the gross amount of dividends repatriated to an eligible U.S. holder. Under the treaty, an eligible U.S. holder is a person who, by reason of domicile, residence, place of head office, place of incorporation or any other criterion of similar nature is subject to taxation in the United States, as applicable under the treaty's "treaty shopping provisions."

Additional China Tax Considerations

Pursuant to the prevailing stamp duty regulations, a stamp duty is not imposed by China on the transfer of shares, such as the H Shares or ADSs, of Chinese publicly traded companies that take place outside of China.

United States Federal Income Taxation

Each potential investor is strongly urged to consult its own tax advisor to determine the particular U.S. federal, state, local, treaty and foreign tax consequences of acquiring, owning or disposing of the H Shares or ADSs.

The following summary describes the principal U.S. federal income tax consequences of purchasing, owning and disposing of the H Shares or ADSs. This summary only applies to U.S. holders, as defined below, who hold the H Shares or ADSs as capital assets within the meaning of Section 1221 of the Internal Revenue Code of 1986 as amended (the "Code"). This discussion does not address all of the tax consequences relating to the purchase, ownership and disposition of the H Shares or ADSs, and does not take into account U.S. holders that may be subject to special rules, including:

- financial institutions;
- insurance companies;
- tax-exempt organizations;

- real estate investment trusts, regulated investment companies, grantor trusts;
- persons that have a functional currency other than the U.S. dollar;
- persons that will own H Shares or ADSs through partnerships or other pass-through entities;
- persons that actually or constructively own 10% or more of the combined voting power of our voting stock or of the total value of our stock;
- dealers or traders in securities or currencies;
- certain former citizens or long-term residents of the United States;
- persons that will hold the H Shares or ADSs as a position in a “straddle” or as part of a “hedging” or “conversion” or other risk reduction transaction for U.S. federal income tax purposes;
- persons who receive the H Shares or ADSs as compensation for services;
- “dual resident” corporations;
- persons that generally mark their securities to market for U.S. federal income tax purposes;
- persons who are residents of the People’s Republic of China or who are subject to Hong Kong profits tax; or
- persons who purchase or sell the H Shares or ADSs as part of a wash sale for U.S. federal tax purposes.

Moreover, this description does not address U.S. federal estate, gift or alternative minimum taxes, the U.S. federal unearned income Medicare contribution tax, or any foreign state or local tax consequences of the acquisition, ownership and disposition of the H Shares or ADSs. Each U.S. holder should consult its tax advisor with respect to the U.S. federal, state, local and foreign tax consequences of acquiring, owning and disposing of H Shares or ADSs.

This discussion is based on the Code, its legislative history, final, temporary and proposed U.S. Treasury regulations promulgated thereunder, published rulings and court decisions as in effect on the date hereof, as well as on the agreement between the United States and the People’s Republic of China for the avoidance of double taxation (the “Treaty”), all of which are subject to change, or change in interpretation, possibly with retroactive effect. In addition, this discussion is based in part upon the assumption that each obligation in the deposit agreement and any related agreements will be performed according to its terms.

You are a “U.S. holder” if you are a beneficial owner of H Shares or ADSs and, for U.S. federal income tax purposes, are:

- an individual citizen or resident of the United States;
- a corporation created or organized under the laws of the United States or any political subdivision thereof;
- an estate the income of which is subject to U.S. federal income tax without regard to its source; or
- a trust: (i) subject to the primary supervision of a U.S. court and one or more U.S. persons (within the meaning of the Code) have the authority to control all substantial decisions of the trust; or (ii) that has validly elected to be treated as a U.S. person under applicable U.S. Treasury Regulations.

If a partnership (including any entity or arrangement treated as a partnership for U.S. federal tax purposes) holds H Shares or ADSs, the tax treatment of the partnership and a partner in such partnership will generally depend upon the status of the partner and the activities of the partnership. If an investor is a partner in a partnership that holds H Shares or ADSs, such investor should consult its tax advisor.

In general, if you hold ADSs evidencing H Shares, you will be treated as the owner of the H Shares represented by the ADSs. Exchanges of H Shares for ADSs, and ADSs for H Shares, generally will not be subject to United States federal income tax.

The tax treatment of your H Shares or ADSs will depend in part on whether or not we are classified as a passive foreign investment company, or PFIC, for United States federal income tax purposes. Except as discussed below under “—Passive Foreign Investment Company Rules,” this discussion assumes that we are not classified as a PFIC for U.S. federal income tax purposes.

INVESTORS SHOULD CONSULT THEIR TAX ADVISORS AS TO THE PARTICULAR TAX CONSIDERATIONS APPLICABLE TO THEM RELATING TO THE PURCHASE, OWNERSHIP AND DISPOSITION OF THE H SHARES OR ADSs, INCLUDING THE APPLICABILITY OF U.S. FEDERAL, STATE AND LOCAL TAX LAWS OR NON-U.S. TAX LAWS, ANY CHANGES IN APPLICABLE TAX LAWS AND ANY PENDING OR PROPOSED LEGISLATION OR REGULATIONS.

Distributions on the H Shares or ADSs

The gross amount of any distribution (without reduction for any PRC tax withheld) we make on the H Shares or ADSs, other than certain pro-rata distributions of the H Shares, will be includible in income as dividend income when you, in the case of the H Shares, or the depository, in the case of ADSs, receive the distribution, actually or constructively. Because we do not calculate earnings and profits in accordance with U.S. tax principles, all distributions by us to U.S. holders will generally be treated as dividends. Any dividend will not be eligible for the dividends-received deduction allowed to certain U.S. corporations in respect of dividends received from U.S. corporations.

If you are a noncorporate U.S. holder, dividends that constitute qualified dividend income will be taxable to you at the preferential rates applicable to long-term capital gains provided that you hold the H Shares or ADSs for more than 60 days during the 121-day period beginning 60 days before the ex-dividend date and meet other holding period requirements. Dividends we pay with respect to the ADSs generally will be qualified dividend income. Dividends that we pay with respect to the H Shares will be qualified dividend income, provided that, in the year that you receive the dividend, we are eligible for the benefits of the Treaty. We believe that we are currently eligible for the benefits of the Treaty, and we therefore believe that dividends that we currently distribute on the H Shares constitute qualified dividend income. However, there can be no assurance that we will be eligible for the benefits of the Treaty in future taxable years, and there can therefore be no assurance that dividends that we distribute on the H Shares will continue to constitute qualified dividend income in such years.

The amount of the dividend distribution that you must include in your income as a U.S. holder will be the U.S. dollar value of the HK dollar payments made, determined at the spot HK dollar/U.S. dollar rate on the date the dividend distribution is includible in your income, regardless of whether the payment is in fact converted into U.S. dollars. Generally, any gain or loss resulting from currency exchange fluctuations during the period from the date you include the dividend payment in income to the date you convert the payment into U.S. dollars will be treated as ordinary income or loss and will not be eligible for the special tax rate applicable to qualified dividend income. Dividends paid by us generally will constitute income from sources outside the United States for U.S. foreign tax credit limitation purposes and will generally be categorized as “passive income” for U.S. foreign tax credit purposes. We may be required to withhold PRC income tax on dividends paid to U.S. holders on the H Shares or ADSs. Subject to various limitations, any PRC tax withheld from distributions in accordance with the Treaty will be deductible or creditable against your U.S. federal income tax liability.

You may not be able to claim a foreign tax credit (and instead may qualify to claim a deduction) for non-U.S. taxes imposed on dividends paid on the H Shares or ADSs if you (i) have held the H Shares or ADSs for less than a specified minimum period, or (ii) are obligated to make related payments with respect to positions in substantially similar or related property (for example, pursuant to a short sale). The rules relating to the U.S. foreign tax credit are complex and U.S. holders may be subject to various limitations on the amount of foreign tax credits that are available. In addition, in the case of a noncorporate U.S. holder, rules similar to the special rules that apply in determining the foreign tax credit limitation when the taxpayer has foreign source capital gains that are taxed in the U.S. at the lower capital gains rate apply in determining the noncorporate U.S. holder’s foreign tax credit limitation arising from dividends that are taxed at the capital gains rate.

Sale, Exchange or Other Disposition

Upon a sale, exchange or other disposition of the H Shares, you will generally recognize capital gain or loss for U.S. federal income tax purposes in an amount equal to the difference between the U.S. dollar value of the amount realized and your tax basis, determined in U.S. dollars, in such H Shares. Generally, gain or loss recognized upon the sale or other disposition of H Shares or ADSs will be capital gain or loss, will be long-term capital gain or loss if the U.S. holder's holding period for such H Shares or ADSs exceeds one year, and will be income or loss from sources within the United States for foreign tax credit limitation purposes. Long-term capital gains of noncorporate U.S. holders are generally taxed at preferential rates. The deductibility of capital losses is subject to significant limitations.

With respect to the sale or exchange of H Shares, the amount realized upon a sale of H Shares generally will be the U.S. dollar value on the settlement date for the sale in the case of a cash basis U.S. holder (or an accrual basis U.S. Holder that so elects). If H Shares are traded on an "established securities market," a cash basis taxpayer or, if it so elects, an accrual basis taxpayer, will determine the U.S. dollar value of the amount realized by translating the amount received at the spot rate of exchange on the settlement date of the sale. A U.S. holder will have a tax basis in the foreign currency received equal to the U.S. dollar amount realized. Any currency exchange gain or loss realized on a subsequent conversion of the foreign currency into U.S. dollars for a different amount generally will be treated as ordinary income or loss from sources within the United States. However, if such foreign currency is converted into U.S. dollars on the date received by the U.S. holder, a cash basis or electing accrual basis U.S. holder should not recognize any gain or loss on such conversion.

Any gain or loss that you recognize upon a sale of the H Shares or ADSs will generally be U.S. source gain or loss for foreign tax credit limitation purposes and, as a result of the U.S. foreign tax credit limitation, foreign taxes, if any, imposed upon capital gains in respect of H Shares or ADSs may not be currently creditable. Under the Treaty, however, if any PRC tax were to be imposed on any gain from the disposition of H Shares or ADSs, the gain could be treated as PRC source income. U.S. holders are urged to consult their tax advisors regarding the tax consequences if a foreign tax is imposed on a disposition of H Shares or ADSs, including the availability of the foreign tax credit under their particular circumstances. Any Hong Kong stamp duty paid will not be a creditable tax for United States federal income tax purposes, although the proceeds that you are treated as receiving upon a sale of the H Shares will be reduced by the amount of the stamp duty.

Passive Foreign Investment Company Rules

A non-U.S. corporation is a PFIC for any taxable year in which, after applying relevant look-through rules with respect to the income and assets of subsidiaries:

- 75% or more of its gross income consists of passive income, such as dividends, interest, rents, royalties, and gains from the sale of assets that give rise to such income; or
- 50% or more of the average quarterly value of its gross assets consists of assets that produce, or are held for the production of, passive income.

Passive income generally includes dividends, interest, gains from the sale or exchange of investment property, rents and royalties, and certain other specified categories of income. However, passive income does not include certain rents and royalties derived from the active conduct of a trade or business. If the stock of a non-U.S. corporation is publicly traded for the taxable year, the asset test is applied using the fair market value of the assets for purposes of measuring such corporation's assets. If we own at least 25% (by value) of the stock of another corporation, we will be treated, for purposes of the PFIC tests, as owning our proportionate share of the other corporation's assets and receiving our proportionate share of the other corporation's income for purposes of the PFIC income and asset tests.

Based on the composition of our assets and income and the current expectations regarding the price of the H Shares and ADSs, we believe that we were not a PFIC for U.S. federal income tax purposes with respect to our 2018 taxable year and we do not intend or anticipate becoming a PFIC in the foreseeable future. However, the determination of PFIC status is a factual determination that must be made annually at the close of each taxable year and, therefore, there can be no certainty as to our status in this regard until the close of the current or any future taxable year. Changes in the nature of our income or assets or a decrease in the trading price of our shares may cause us to be considered a PFIC in the current or any subsequent year. If we were a PFIC in any year during a U.S. holder's holding period for the H Shares or ADSs, we would ordinarily continue to be treated as a PFIC for each subsequent year during which the U.S. holder owned the H Shares or ADSs.

If we were a PFIC in any taxable year that you held the H Shares or ADSs, you generally would be subject to special rules with respect to "excess distributions" made by us on the H Shares or ADSs and with respect to gain from your disposition of the H Shares or ADSs. An "excess distribution" generally is defined as the excess of the distributions you receive with respect to the H Shares or ADSs in any taxable year, other than the taxable year in which your holding period in the H Shares or ADSs begins, over 125% of the average annual distributions you have received from us during the shorter of the three preceding years, or your holding period for the H Shares or ADSs that preceded the taxable year in which you receive the distribution. Generally, you would be required to allocate any excess distribution or gain from the disposition of the H Shares or ADSs ratably over your holding period for the H Shares or ADSs. The portion of the excess distribution or gain allocated to a prior taxable year, other than a year prior to the first year in which we became a PFIC, would be taxed at the highest U.S. federal income tax rate in effect for such taxable year, and you would be subject to an interest charge on the resulting tax liability, determined as if the tax liability had been due with respect to such particular taxable years. The portion of the excess distribution or gain that is not allocated to prior taxable years, together with the portion allocated to the years prior to the first year in which we became a PFIC, would be included in your gross income for the taxable year of the excess distribution or disposition and taxed as ordinary income.

These adverse tax consequences may be mitigated if the U.S. holder is eligible to and does elect to annually mark-to-market the H Shares or ADSs. If a U.S. holder makes a mark-to-market election, such holder will generally include as ordinary income the excess, if any, of the fair market value of the H Shares or ADSs at the end of each taxable year over its adjusted basis, and will be permitted an ordinary loss in respect of the excess, if any, of the adjusted basis of the H Shares or ADSs over their fair market value at the end of the taxable year (but only to the extent of the net amount of income previously included in income as a result of the mark-to-market election). Any gain recognized on the sale or other disposition of the H Shares or ADSs will be treated as ordinary income and any loss would be an ordinary loss to the extent of the net amount of previously included income as a result of the market-to-market election and, thereafter, a capital loss. The mark-to-market election is available only for "marketable stock," which is stock that is traded in other than *de minimis* quantities on at least 15 days during each calendar quarter on a qualified exchange or other market, as defined in the applicable Treasury regulations. The H Shares or ADSs may qualify as "marketable stock" because the ADSs are listed on the New York Stock Exchange.

A U.S. holder's adjusted tax basis in the H Shares or ADSs will be increased by the amount of any income inclusion and decreased by the amount of any deductions under the mark-to-market rules. If a U.S. holder makes a mark-to-market election it will be effective for the taxable year for which the election is made and all subsequent taxable years unless the H Shares or ADSs are no longer regularly traded on a qualified exchange or the IRS consents to the revocation of the election. U.S. holders are urged to consult their tax advisors about the availability of the mark-to-market election, and whether making the election would be advisable in their particular circumstances. However, the stock of any of our subsidiaries that were PFICs would not be eligible for the mark-to-market election.

Alternatively, a timely election to treat us as a qualified electing fund could be made to avoid the foregoing rules with respect to excess distributions and dispositions. You should be aware, however, that if we become a PFIC, we do not intend to satisfy the recordkeeping requirements that would permit you to make a qualified electing fund election.

In addition, notwithstanding any election you make with regard to the shares or ADSs, dividends that you receive from us will not constitute qualified dividend income to you if we are a PFIC (or are treated as a PFIC with respect to you) either in the taxable year of the distribution or the preceding taxable year. Dividends that you receive that do not constitute qualified dividend income are not eligible for taxation at the preferential rates applicable to qualified dividend income. Instead, you must include the gross amount of any such dividend paid by us in your gross income, and it will be subject to tax at rates applicable to ordinary income.

If we were regarded as a PFIC, a U.S. holder of H Shares or ADSs may be required to file an information return on IRS Form 8621.

U.S. holders should consult their tax advisors concerning the U.S. federal income tax consequences of holding the H Shares or ADSs if we were considered to be a PFIC.

Information with Respect to Foreign Financial Assets

Owners of “specified foreign financial assets” with an aggregate value in excess of \$50,000 (and in some circumstances, a higher threshold) may be required to file an information report with respect to such assets with their tax returns. “Specified foreign financial assets” may include financial accounts maintained by foreign financial institutions, as well as the following, but only if they are held for investment and not held in accounts maintained by financial institutions: (i) stocks and securities issued by non-United States persons, (ii) financial instruments and contracts that have non-United States issuers or counterparties, and (iii) interests in foreign entities. Holders are urged to consult their tax advisors regarding the application of this reporting requirement to their ownership of the H Shares or ADSs.

Backup Withholding and Information Reporting

If you are a noncorporate U.S. holder, information reporting requirements, on IRS Form 1099, generally will apply to dividend payments or other taxable distributions made to you within the United States, and the payment of proceeds to you from the sale of the H Shares or ADSs effected at a United States office of a broker.

Additionally, backup withholding may apply to such payments if you fail to comply with applicable certification requirements or (in the case of dividend payments) are notified by the IRS that you have failed to report all interest and dividends required to be shown on your federal income tax returns.

Payment of the proceeds from the sale of the H Shares or ADSs effected at a foreign office of a broker generally will not be subject to information reporting or backup withholding. However, a sale effected at a foreign office of a broker could be subject to information reporting in the same manner as a sale within the United States (and in certain cases may be subject to backup withholding as well) if (i) the broker has certain connections to the United States, (ii) the proceeds or confirmation are sent to the United States or (iii) the sale has certain other specified connections with the United States.

You generally may obtain a refund of any amounts withheld under the backup withholding rules that exceed your income tax liability by filing a refund claim with the IRS.

Hong Kong Taxation

The following discussion summarizes the material Hong Kong tax provisions relating to the ownership of H Shares or ADSs held by you.

Dividends

Under current Hong Kong Inland Revenue Department practice, no Hong Kong tax is payable by the recipient in respect of dividends paid by us, either by withholding or otherwise, unless such dividends are attributable to a trade, profession or business carried on in Hong Kong.

Taxation of Capital Gains

Hong Kong profits tax is currently charged at a flat rate of 16.5% for corporations and 15% for unincorporated businesses and individuals, except that the respective half-rates of 8.25% and 7.5% apply for the first HK\$2 million of assessable profits for years of assessment beginning on or after April 1, 2018.

No Hong Kong tax is imposed on capital gains arising from the sale of property (such as H Shares) acquired and held as a capital investment. However, if a person carries on a business in Hong Kong that includes trading and dealing in securities, and derives trading gains from such activities or from other Hong Kong sources, Hong Kong profits tax will be payable. Gains from sales of H Shares effected on the Hong Kong Stock Exchange are considered to be from a Hong Kong source for this purpose. The source of gains from off-exchange transactions is less clear and, generally, will depend on whether the purchase and sale contracts were negotiated and, in substance, concluded in Hong Kong. In addition, exemption from profits tax is available for certain classes of taxpayers, notably privately offered onshore and offshore funds operating in Hong Kong, as well as non-Hong Kong residents who do not otherwise carry on business in Hong Kong, subject to compliance with various other requirements.

The Hong Kong tax position with respect to gains from the disposal of ADSs is similar. However, no Hong Kong tax will apply on trading gains arising from the sale of ADSs where the purchase and sale were effected on the NYSE.

Hong Kong Stamp Duty

Hong Kong stamp duty is payable by each seller and purchaser for every sold note and every bought note created for every sale and purchase of “Hong Kong stock” (which means stock the transfer of which is required to be registered in Hong Kong), including the H Shares. Stamp duty is charged at the total rate of 0.2% of the value of the H Shares transferred (the buyer and seller each paying half of such stamp duty). In addition, a fixed duty of HK\$5 is currently payable on an instrument of transfer of H Shares. If one of the parties to a sale is a non-resident of Hong Kong and does not pay the required stamp duty, the unpaid stamp duty will be assessed on the instrument of transfer (if any), and the transferee will be liable for the full payment of such amount.

If the withdrawal of H Shares when ADSs are surrendered or the issuance of ADSs when H Shares are deposited results in a change of beneficial ownership in the H Shares under Hong Kong law, Hong Kong stamp duty at the rate described above for sale and purchase transactions will apply. The issuance of ADSs for deposited H Shares issued directly to the depository or for the account of the depository should not lead to a Hong Kong stamp duty liability. Holders of the ADSs are not liable for the Hong Kong stamp duty on transfers of ADSs outside of Hong Kong so long as the transfers do not result in a change of beneficial interest in the H Shares under Hong Kong law.

Estate Duty

The Revenue (Abolition of Estate Duty) Ordinance 2005 came into effect on February 11, 2006 in Hong Kong. No Hong Kong estate duty is payable and no estate duty clearance papers are needed for an application for a grant of representation in respect of holders of H Shares or ADSs whose death occurs on or after February 11, 2006.

F. Dividends and Paying Agents

Not applicable.

G. Statement by Experts

Not applicable.

H. Documents on Display

We are subject to the periodic reporting and other informational requirements of the Exchange Act. Under the Exchange Act, we are required to file reports and other information with the SEC. Specifically, we are required to file an annual report under Form 20-F no later than four months after the close of each of our fiscal years, which is December 31, for fiscal years ended after December 15, 2011. Copies of reports and other information, when so filed, may be inspected without charge and may be obtained at prescribed rates at the SEC’s public reference room located at 100 F Street, NE, Washington, D.C. 20549. The public may obtain information regarding the Washington, D.C. Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC also maintains a website at www.sec.gov that contains reports and other information regarding registrants that make electronic filings with the SEC using its EDGAR filing system. As a foreign private issuer, we are exempt from the rules under the Exchange Act prescribing the furnishing and content of quarterly reports and proxy statements, and officers, directors and principal shareholders of ours are exempt from the reporting and short-swing profit recovery provisions contained in Section 16 of the Exchange Act.

I. Subsidiary Information

Not applicable.

Item 11. Quantitative and Qualitative Disclosures about Market Risk

We are exposed to various types of market risks, including credit risk relating to financial assets and changes in foreign exchange rates, interest rates and the prices of alumina and primary aluminum, in the normal course of business.

We borrow short-term, medium-term and long-term funds, including variable rate debts, principally denominated in Renminbi. We hedge a limited amount of our sales through the trade of futures contracts on the SHFE and LME. Our hedging activities are subject to policies approved by our senior management. Substantially all of the financial instruments we hold are for purposes other than trading.

The following discussion, which contains “forward-looking statements” that involve risks and uncertainties, summarize our market-sensitive financial instruments. Such discussions address markets risk only and do not present other risks, which we face in the normal course of business.

Credit Risk

Credit risk arises from balances with banks and financial institutions, trade and notes receivables, other current and non-current receivables as well as credit exposures of customers, including outstanding receivables and committed transactions. We also provide financial guarantees to certain subsidiaries and a joint venture. The carrying amounts of these receivables and amounts of financial guarantees represent our maximum exposure to credit risk in relation to our financial assets and guarantees.

We maintain substantially all of our bank balances and cash and short-term investments in several major state-owned banks in the PRC. Our directors are of the opinion that these assets are not exposed to significant credit risk.

With regard to receivables, the marketing department assesses the credit quality of the customers and related parties, taking into account their financial positions, past experience and other factors. We perform periodic credit evaluations of our customers and believe that adequate provisions for impairment of receivables have been made in the financial statements. Management does not expect any further losses from non-performance by these counterparties.

For the year ended December 31, 2019, revenues of approximately RMB40,567 million are derived from entities directly or indirectly owned or controlled by the PRC government including Chinalco. There were no other individual customers from whom we have derived revenue of more than 10% of our revenue during the year ended December 31, 2017, 2018 and 2019. Thus, our directors are of the opinion that we were not exposed to any significant concentration of credit risk as of December 31, 2017, 2018 and 2019.

Foreign Exchange Rate Risk

We conduct our business primarily in Renminbi, which is our functional and reporting currency. We convert a portion of our Renminbi revenues into other currencies to meet foreign currency obligations and to pay for imported equipment and materials.

Many foreign currency exchange transactions involving Renminbi, including foreign exchange transactions under our capital account, are subject to foreign exchange controls and require the approval of the SAFE. Actions taken by the PRC government could cause future exchange rates to vary significantly from current or historical exchange rates. On July 21, 2005, the PBOC announced a reform of its exchange rate system. Under the reform, the Renminbi is no longer effectively linked to the U.S. dollar but instead is allowed to fluctuate within a narrow and managed band against a basket of foreign currencies, according to market demand and supply conditions. In April 2012, the PRC government took a milestone step in turning the Renminbi into a global currency by doubling the size of its trading band against the U.S. dollar, pushing through a crucial reform that further liberalizes its financial markets. The PBOC allows the Renminbi to rise or fall 1% from a mid-point every day, effective on April 16, 2012, compared with its previous 0.5% limit. The PBOC allows the Renminbi to rise or fall 2% from a mid-point every day, effective on March 17, 2014, compared with its previous 1% limit. In August 2015, the PBOC announced that the daily central parity quotes the market-makers reported to the China Foreign Exchange Trade System operated by the PBOC before the market opens should be based on the closing rate of the inter-bank foreign exchange rate market on the previous day, supply and demand in the market, and price movement of major currencies, effective on August 11, 2015. Any appreciation of the Renminbi will increase the prices of our export sales denominated in foreign currencies and reduce the Renminbi equivalent value of our trade and notes receivable denominated in foreign currencies, which may adversely affect our financial condition and results of operations. Our financial condition and operating performance may also be affected by changes in the value of currencies other than Renminbi in which our earnings and obligations are denominated.

Our bank balances and cash on hand as of December 31, 2019 amounted to RMB9,065.0 million, including Renminbi balances and foreign currency deposits of U.S. dollar, HK dollar, Euro and Indonesian rupiah, which translated into RMB1,195.7 million, RMB4.4 million, RMB1.9 million and RMB4.0 million, respectively. Most of our sales are domestic and as such we have a limited amount of foreign currency denominated receivables and payables. As of December 31, 2019, we had foreign currency denominated loans with principal amount of RMB17 million in Japanese Yen and RMB4,006 million in U.S. dollars. In addition, as of December 31, 2019, our trade and notes receivables, other receivables and trade and notes payables denominated in U.S. dollars amounted to RMB1,111 million, RMB37 million and RMB52 million, respectively; our other payables and accrued liabilities denominated in U.S. dollars and HK dollars amounted to RMB825 million and RMB0.25 million, respectively.

As of December 31, 2019, if Renminbi had weakened/strengthened by 5% against U.S. dollars with all other variables held constant, the total comprehensive income for the year would have been approximately RMB95 million higher/lower, mainly as a result of foreign exchange gains and losses arising from the translation of U.S.-dollar-denominated payables and medium-term notes. Profit was more sensitive to the fluctuation in the RMB/U.S. dollars exchange rates in 2019 than in 2018, mainly due to the increase in the U.S.-dollar-denominated other payables and medium-term notes.

As the assets and liabilities denominated in other foreign currencies other than U.S. dollars were relatively minimal to our total assets and liabilities, our directors are of the opinion that we were not exposed to any significant foreign currency risk arising from these foreign currency denominated assets and liabilities as of December 31, 2018 and 2019.

Interest Rate Risk

As of December 31, 2019, as we had no significant interest-bearing assets except for bank deposits and entrusted loans, our income and operating cash flows are substantially independent of changes in market interest rates.

Most of the bank deposits are maintained in savings and time deposit accounts in the PRC. The interest rates are regulated by the PBOC and our Group treasury closely monitors the fluctuation on such rates periodically. The interest rates of entrusted loans are fixed. As the interest rates applied to the entrusted loans were fixed, our directors are of the opinion that we were not exposed to any significant interest rate risk for our financial assets held as of December 31, 2018 and 2019.

The interest rate risk for our financial liabilities primarily arises from interest-bearing loans. Loans borrowed at floating interest rates expose us to cash flow interest rate risk. We enter into debt obligations to support general corporate purposes including capital expenditures and working capital needs. Our Group treasury closely monitors market interest rates and maintains a balance between variable rate and fixed rate borrowings in order to reduce the exposures to the interest rate risk described above.

As of December 31, 2019, if interest rates had been 100 basis points higher/lower for bank and other loans borrowed at floating interest rates with all other variables held constant, net profit for the year would have been RMB451 million lower/higher, respectively, mainly as a result of the higher/lower interest expense on floating rate borrowings.

Our interest rate risk for our financial liabilities also arises from medium-term notes and short-term bonds issued at fixed rates. As the fluctuation of comparable interest rates of corporate bonds with similar terms was relatively low, our directors are of the opinion that we are not exposed to any significant fair value interest rate risk for its fixed interest rate borrowings held as of December 31, 2018 and 2019.

Commodity Price Risk

We are exposed to fluctuations in the prices of alumina, primary aluminum and other products. We import a small portion of our alumina supply from suppliers outside China. Such purchases are made at market prices. In addition, all our sales of alumina, primary aluminum and other products are made at market prices. Therefore, fluctuations in the prices of alumina and primary aluminum have a significant effect on our operating performances.

We use mainly futures contracts and option contracts traded on the SHFE and the LME to hedge against fluctuations in primary aluminum prices. We use the futures contract for hedging other than speculation. As of December 31, 2019, the fair values of the outstanding futures contracts amounting to RMB3 million and RMB1 million were recognized in financial assets and financial liabilities at fair value through profit or loss, respectively. As of December 31, 2019, we did not hold any option contracts.

As of December 31, 2018 and 2019, if the commodity futures prices had increased/decreased by 3% and all other variables held constant, the profit for the respective year would have changed by the amounts shown below:

	<u>2018</u>	<u>2019</u>
Primary aluminum	Decrease/increase RMB14 million	Decrease/increase RMB40 million
Copper	Increase/decrease RMB0.9 million	Increase/decrease RMB0.9 million
Zinc	Decrease/increase RMB1.0 million	Decrease/increase RMB5.1 million
Coal	Decrease/increase RMB2.7 million	Decrease/increase RMB0.2 million

Liquidity risk

We monitor rolling forecasts of our liquidity requirements to ensure we have sufficient cash to meet operational needs while maintaining sufficient headroom on our undrawn committed borrowing facilities at all times so that we do not breach borrowing limits or covenants (where applicable) on any of our borrowing facilities. Such forecast takes into consideration our debt financing plans, covenant compliance, compliance with internal balance sheet ratio targets and, if applicable, external regulatory or legal requirements. Our management also monitors rolling forecasts of our liquidity reserve on the basis of expected cash flows.

As of December 31, 2019, we had total banking facilities of approximately RMB167,431 million, of which RMB49,347 million had been utilized, and unutilized banking facilities amounted to RMB118,084 million as of December 31, 2019, among which, banking facilities of approximately RMB108,360 million will be subject to renewal during the next 12 months from January 1, 2020. Our directors are confident that such banking facilities could be renewed upon their expiration based on our past experience with banks and our good credit standing. In addition, as of December 31, 2019, we had no credit facilities through our futures agent at LME. The futures agent has the right to adjust the related credit facilities.

The following table sets forth the maturity profile of our financial liabilities as of December 31, 2019:

	<u>Within 1 year⁽¹⁾</u>	<u>1 to 2 years⁽¹⁾</u>	<u>2 to 5 years⁽¹⁾</u>	<u>Over 5 years⁽¹⁾</u>	<u>Total⁽¹⁾</u>
	<i>(RMB in millions)</i>				
Lease liabilities, including current portion	1,730	1,107	1,334	10,377	14,548
Long-term bank and other loans, including current portion	3,340	7,526	9,159	18,811	38,836
Medium-term notes and bonds, including current portion	—	7,286	9,500	—	16,786
Short-term bonds	9,300	—	—	—	9,300
Gold leasing arrangement	6,922	—	—	—	6,922
Short-term bank and other loans	21,238	—	—	—	21,238
Interest payables for loans and borrowings	4,956	2,289	4,220	978	12,443
Financial liabilities at fair value through profit or loss	1	—	—	—	1
Financial liabilities included in other payables and accrued liabilities, excluding accrued interest	10,288	—	—	—	10,288
Financial liabilities included in other non-current liabilities ⁽²⁾	—	176	182	858	1,216
Trade and notes payables	12,585	—	—	—	12,585
Total	70,360	18,384	24,395	31,024	144,163

(1) The amounts disclosed are the contractual undiscounted cash flows.

(2) As of December 31, 2019, the carrying value of financial liabilities included in other non-current liabilities was RMB1,153 million.

Item 12. Description of Securities Other Than Equity Securities

A. Debt Securities

Not applicable.

B. Warrants and Rights

Not applicable.

C. Other Securities

Not applicable.

D. American Depositary Shares

The following table summarizes the fees and charges that a holder of our ADSs may have to pay, directly or indirectly, in connection with the ownership of Chalco's ADSs.

Persons depositing or withdrawing shares must pay:

For:

\$5.00 (or less) per 100 ADSs (or portion thereof)

- Issuance of ADSs, including issuances resulting from a distribution of shares or rights or other property

\$0.02 (or less) per ADS (or portion thereof)

- Cancellation of ADSs for the purpose of withdrawal, including if the deposit agreement terminates

\$5.00 (or less) per 100 ADSs (or portion thereof)

- Any cash distribution

\$0.02 (or less) per ADS (or portion thereof) per calendar year

- Any distribution other than cash

As necessary

- Depositary services

As necessary

- Transfer and registration of shares to or from the name of the depositary or its agent when you deposit or withdraw shares

As necessary

- Cable, telex and facsimile transmissions (when expressly provided in the deposit agreement)

As necessary

- Converting foreign currency to U.S. dollars

- Taxes and other governmental charges that the depositary or the custodian have to pay on any ADS or share underlying an ADS, for example, stock transfer taxes, stamp duty or withholding taxes

- Any charges incurred by the depositary or its agents for servicing the deposited securities

The Bank of New York Mellon, as depositary, has agreed to reimburse certain expenses related to the administration and maintenance of our ADR program incurred by us in connection with the program. From January 1, 2019 to December 31, 2019, we received no depositary reimbursements for our continuing annual stock exchange listing fees and our expenses incurred in connection with investor relationship programs. The depositary has also agreed to waive certain standard out-of-pocket administrative, maintenance and shareholder services expenses related to our ADR program. From January 1, 2019 to December 31, 2019, the total amount of the fees that were waived was US\$131,882.25.

PART II

Item 13. Defaults, Dividend Arrearages and Delinquencies

None.

Item 14. Material Modifications to the Rights of Security Holders and Use of Proceeds

None.

Item 15. Controls and Procedures

Our management, with the participation of our principal executive officer and principal financial officer, after evaluating the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15(d)-15(e) of the Exchange Act) as of the end of the period covered by this annual report, have concluded that, as of such date, our disclosure controls and procedures were effective.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d- 15(f) under the Exchange Act. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles.

Our internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of a company's assets, (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of consolidated financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures are being made only in accordance with authorizations of our management and directors, and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of our assets that could have a material effect on the consolidated financial statements. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Under the supervision of and with the participation of the principal executive officer and principal financial officer, our management conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2019, based on the framework in the Internal Control-Integrated Framework (2013 Framework) issued by the Committee of Sponsoring Organizations of the Treadway Commission in May 2013.

Based on our evaluation under the framework in Internal Control-Integrated Framework (2013 Framework) issued by the Committee of Sponsoring Organizations of the Treadway Commission, our management concluded that, as of December 31, 2019, our internal control over financial reporting was effective to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with the IFRS.

The effectiveness of our internal controls over financial reporting as of December 31, 2019 has been audited by Ernst & Young Hua Ming LLP, an independent registered public accounting firm, as stated in their report which is included herein.

Changes in Internal Control over Financial Reporting

During 2019, there have been no material changes in our internal control over financial reporting that occurred during the fiscal year covered by this annual report that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 16A. Audit Committee Financial Expert

Our audit committee members are three independent non-executive directors, namely, Ms. Chen Lijie, Mr. Hu Shihai and Mr. Lie-A-Cheong Tai Chong, David. Our Board has determined that Mr. Lie-A-Cheong Tai Chong, David, the chairman of the audit committee, qualifies as an "audit committee financial expert" as defined in Item 16A of Form 20-F and is the financial expert serving on our audit committee. See "Item 6. Directors, Senior Management and Employees."

Item 16B. Code of Ethics

We have adopted a code of ethics that applies to our chief executive officer, chief financial officer, other directors, independent non-executive directors, senior management and employees. We have posted our code of ethics on our website: http://www.chalco.com.cn/chalcoen/whzr/ddgf/A130516web_1.htm. A hard copy of this code of ethics is available to investors free of charge upon written request to the address on the cover of this annual report on Form 20-F.

Item 16C. Principal Accountant Fees and Services

Ernst & Young Hua Ming LLP served as our independent auditor for the fiscal years ended December 31, 2018 and 2019. A description of the fees billed to us by Ernst & Young Hua Ming LLP, Ernst & Young and Ernst & Young (China) Advisory Limited for professional services in each of the last two fiscal years is set forth below:

	Year ended December 31	
	2018	2019
	<i>(RMB in thousands)</i>	
Audit fee ⁽¹⁾	25,329	25,444
Audit-related fees ⁽²⁾	1,130	250
Tax fees ⁽³⁾	—	1,938
Other fees ⁽⁴⁾	240	200

- (1) “Audit fee” represents the fee obtained from audit work charged by Ernst & Young Hua Ming LLP and Ernst & Young for the years ended December 31, 2018 and 2019.
- (2) “Audit-related fees” represent aggregate fees charged by Ernst & Young Hua Ming LLP and Ernst & Young for comfort letters about acquisitions, debt issuance, the Asset Restructuring and issue of capital verification report for the years ended December 31, 2018 and 2019.
- (3) “Tax fees” represent the fees charged by Ernst & Young (China) Advisory Limited for providing consulting services for the year ended December 31, 2019.
- (4) “Other fees” represent the fees charged by Ernst & Young (China) Advisory Limited for permissible professional services rendered in connection with the environmental, social and governance report, investment advisory and other advisories for the years ended December 31, 2018 and 2019.

Our audit committee pre-approves all audit, audit-related services, tax services and other services performed by Ernst & Young Hua Ming LLP, Ernst & Young and Ernst & Young (China) Advisory Limited, for the years ended December 31, 2018 and 2019.

Item 16D. Exemptions from the Listing Standards for Audit Committees

Not applicable.

Item 16E. Purchase of Equity Securities by the Issuer and Affiliated Purchasers

We did not have an equity securities repurchase program and did not repurchase any of our equity securities during the year ended December 31, 2019.

Item 16F. Change in Registrant's Certifying Accountant

(a) Change of Principal Accountant

On March 26, 2020, our Board resolved, as approved and recommended by our audit committee, to propose change in our independent registered public accounting firms, Ernst & Young Hua Ming LLP ("EY"), upon the expiration of its current term of office at the close of the forthcoming annual general meeting of the shareholders to be held in June 2020 (the "2019 AGM") due to the relevant regulations issued by the MOF and the SASAC, which impose certain restrictions in respect of the number of years of audit services that an accounting firm may continuously provide to a state-owned enterprise and its subsidiaries. As a result, EY will not offer themselves for re-appointment at the 2019 AGM.

EY's audit reports on the consolidated financial statements as of December 31, 2018 and 2019, and for the years ended December 31, 2018 and 2019, do not contain any adverse opinion or any disclaimer of opinion, and are not qualified or modified as to uncertainty, audit scope, or accounting principles.

During the years ended December 31, 2018 and 2019 and through April 22, 2020, there have been no (i) disagreements between us and EY on any matter of accounting principles or practices, financial statement disclosure, or auditing scope or procedure, which, if not resolved to the satisfaction of EY, would have caused them to make reference thereto in their audit reports on the consolidated financial statements for such years, or (ii) reportable events as defined in Item 16F(a)(1)(v) of Form 20-F. As used herein, the term "reportable event" means any of the items listed in paragraphs (a)(1)(v)(A)-(D) of Item 16F of Form 20-F.

We have provided a copy of the above statements to EY and have requested that EY furnish us with a letter addressed to the SEC stating whether they agree with the above statements, and if not, stating the respects in which they do not agree. A copy of such letter, dated April 22, 2020, furnished by EY is filed as Exhibit 15.1 to this annual report on Form 20-F.

(b) Appointment of New Principal Accountant

On March 26, 2020, our Board resolved, as approved and recommended by our audit committee, to propose to appoint PricewaterhouseCoopers Zhong Tian LLP ("PwC") as our new independent registered public accounting firm, subject to the approval of our shareholders at the 2019 AGM, upon which the tenure of the office of PwC will commence.

During the years ended December 31, 2018 and 2019 and through April 22, 2020, neither we nor anyone on our behalf consulted PwC regarding (i) the application of accounting principles to a specified transaction, either completed or proposed, (ii) the type of audit opinion that might be rendered on our financial statements, and neither a written report nor oral advice was provided to us that PwC concluded was an important factor considered by us in reaching a decision as to any accounting, auditing, or financial reporting issue, (iii) any matter that was the subject of disagreement as defined in Item 16F(a)(1)(iv) of Form 20-F and the related instructions to this Item, or (iv) any reportable events as defined in paragraphs Item 16F(a)(1)(v) of Form 20-F.

Item 16G. Corporate Governance

The NYSE has imposed a series of corporate governance standards for companies listed on the NYSE in Section 303A of the NYSE Listed Company Manual. However, the NYSE provides that listed companies that are foreign private issuers, subject to certain limitations and conditions, are permitted to follow "home country" practice in lieu of the provisions of Section 303A of the NYSE Listed Company Manual. As a foreign private issuer listed on the NYSE, we are required to disclose a summary of the significant differences between our corporate governance practice and NYSE corporate governance rules that apply to U.S. domestic issuers.

Majority of independent directors	<p>NYSE Listed Company Manual Requirements on Corporate Governance</p> <p>NYSE requires that the board of a listed company must comprise a majority of independent directors.</p>	<p>Our Practice</p> <p>Under applicable PRC and Hong Kong laws and regulations, our Board is not required to be formed with a majority of independent directors. The Listing Rules require that every board of directors of a listed company must include at least three independent non-executive directors and at least one third of the board of directors of a listed company are independent non-executive directors. Our Board currently comprises three independent directors and six non-independent directors, which is in compliance with the requirement by the PRC securities regulatory authorities and of the Listing Rules.</p>
Nominating/Corporate Governance Committee	<p>NYSE requires U.S. domestic issuers to have only independent directors on their nominating/corporate governance committees.</p>	<p>The Listing Rules require that listed companies should establish a nomination committee which consists of a majority of independent non-executive directors. We have a nomination committee that consists of two non-independent directors and three independent directors, which is in compliance with the requirement of the Listing Rules.</p>
Compensation Committee	<p>NYSE requires U.S. domestic issuers to have a compensation committee composed entirely of independent directors.</p>	<p>The Listing Rules contain a code provision that the listed companies should establish a remuneration committee which consists of a majority of independent non-executive directors. We have a remuneration committee that consists of two independent directors, which is in compliance with the requirement of the Listing Rules.</p>

Item 16H. Mine Safety Disclosure

As of the date of this annual report, we do not own or operate any mine in the United States. For details of the mining safety control of our bauxite mines in China, see “Item 4. Information on the Company - B. Business Overview - Raw Materials - Alumina - Own Mines.”

PART III

Item 17. Financial Statements

We have elected to provide the financial statements and related information specified in Item 18 in lieu of Item 17.

Item 18. Financial Statements

The audited Consolidated Financial Statements as required under Item 18 are attached hereto starting on page F-1 of this Form 20-F.

Item 19. Exhibits

Exhibit Number	Description
<u>1.1*</u>	<u>English translation of Amended Articles of Association of Aluminum Corporation of China Limited</u>
<u>2.1</u>	<u>Registrant’s Specimen American Depositary Receipt (incorporated by reference to Exhibit 2.1 of our annual report on Form 20-F/A (file No. 001-15264) filed with the Securities and Exchange Commission on October 9, 2012)</u>
<u>2.2</u>	<u>Registrant’s Specimen Certificate for H Shares (incorporated by reference to Exhibit 2.2 of our annual report on Form 20-F/A (file No.001-15264) filed with the Securities and Exchange Commission on October 9, 2012)</u>

Exhibit Number	Description
2.3	Deposit Agreement among the Registrant, The Bank of New York, as depository, and Owners and Beneficial Owners of the American Depositary Receipts (incorporated by reference to Exhibit 2.3 of our annual report on Form 20-F/A (file No. 001-15264) filed with the Securities and Exchange Commission on October 9, 2012)
2.4*	Description of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended
4.1	English translation of Form of Employment Contract (incorporated by reference to Exhibit 4.1 of our annual report on Form 20-F/A (file No. 001-15264) filed with the Securities and Exchange Commission on October 9, 2012)
8.1*	List of Subsidiaries of Aluminum Corporation of China Limited as of December 31, 2019
12.1*	Certification by the Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
12.2*	Certification by the Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
13.1*	Certification by the Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
13.2*	Certification by the Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
15.1*	Letter from Ernst & Young Hua Ming LLP
101.INS*	XBRL Instance Document
101.SCH*	XBRL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document

* Filed with this annual report on Form 20-F

SIGNATURES

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

ALUMINUM CORPORATION OF CHINA LIMITED

By: /s/ Lu Dongliang

Name: Lu Dongliang

Title: Executive Director and Chairman of the Board

Date: April 22, 2020

ALUMINUM CORPORATION OF CHINA LIMITED

Consolidated Financial Statements

For the Years Ended December 31, 2017, 2018 and 2019

Together with Reports of Independent Public Accounting Firm

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ALUMINUM CORPORATION OF CHINA LIMITED

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and the Board of Directors of Aluminum Corporation of China Limited

Opinion on the Financial Statements

We have audited the accompanying consolidated statements of financial position of Aluminum Corporation of China Limited (the “Group”) as of December 31, 2018 and 2019, and the related consolidated statements of profit or loss and other comprehensive income, changes in equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Group at December 31, 2018 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the Group’s internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated April 22, 2020 expressed an unqualified opinion thereon.

Adoption of New Accounting Standards

As discussed in Note 2 to the consolidated financial statements, the Group has changed its method for accounting for revenue from contracts with customers using a modified retrospective approach, and its method for accounting for the classification, measurement, presentation and disclosure of financial instruments during the year ended December 31, 2018, and its method for accounting for leases using a modified retrospective approach during the year ended December 31, 2019.

Change in Accounting Policy

As discussed in Note 2 to the consolidated financial statements, the Group has elected to change its method of presenting government grants during the year ended December 31, 2018. The Group applied this change in accounting principle retrospectively to all prior periods presented.

Basis for Opinion

These financial statements are the responsibility of the Group’s management. Our responsibility is to express an opinion on the Group’s financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Group in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of the critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Impairment of property, plant and equipment

Description of the Matter

At December 31, 2019, the Group’s property, plant and equipment (“PPE”) was RMB103,331 million. As described in Notes 2.8, 3 and 6 to the consolidated financial statements, the Group is required to review PPE for impairment whenever events or changes in circumstances indicate that their carrying amounts may not be recoverable. Management performed an impairment assessment on such PPE by determining the recoverable amounts of the cash generating units (“CGUs”) that the PPE are allocated to. As a result of the impairment assessment, impairment losses of RMB259 million were recognized during the year ended December 31, 2019.

Auditing management's impairment assessment of PPE was complex due to the significant estimates and judgments involved in the projections of future cash flows, including the future prices of aluminum and alumina, expected production and sales volumes, production costs, operating expenses and discount rates applied to these forecasted future cash flows. These estimates and judgments may be significantly affected by unexpected changes in the future market or economic conditions.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the PPE impairment assessment process including tests of controls over management's review of the significant assumptions used in the impairment assessment.

Amongst other audit procedures performed, we compared the methodology used by the Group, that is, recoverable amount calculations based on future discounted cash flows, to industry practice and tested the completeness and accuracy of the underlying data used in the projections. We also assessed the reasonableness of the significant assumptions used in the calculations, which comprised of, amongst others, future prices of aluminum and alumina, expected production and sales volumes, production costs, operating expenses and discount rates, by comparing them to external industry outlook reports from a number of sources and by analyzing the historical accuracy of management's estimates. In addition, we involved our valuation specialists to assist us with assessing the appropriateness of the valuation methodologies and the reasonableness of assumptions used, including the discount rates.

We performed a sensitivity analysis around the significant assumptions described above to assess the changes to the recoverable amounts of the CGUs resulting from changes in these assumptions, both individually and in aggregate.

We also assessed the adequacy of the Group's disclosures included in Note 6 to the consolidated financial statements regarding the significant assumptions of impairment testing.

Impairment of goodwill

Description of the Matter

At December 31, 2019, the Group's goodwill was RMB3,511 million. As described in Notes 2.1, 2.8, 3 and 5 to the consolidated financial statements, the Group is required to, at least annually, perform impairment assessments of goodwill. For the purpose of performing impairment assessments, goodwill was allocated to CGUs. Management performed the impairment testing by comparing the recoverable amount of the CGUs and the carrying amount of the CGUs.

Auditing management's annual goodwill impairment assessment was complex because the determination of the recoverable amount of the underlying CGUs involved estimates and judgments, including future prices of aluminum and alumina, expected production and sales volumes, production costs, operating expenses, terminal growth rates used to estimate future cash flows and discount rates applied to these forecasted future cash flows of the underlying CGUs. These estimates and judgments may be significantly affected by unexpected changes in future market or economic conditions.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the impairment assessment process including testing controls over management's review of the key assumptions used in the goodwill impairment assessment.

Amongst other audit procedures performed, we compared the methodology used (recoverable amount calculations based on future discounted cash flows) by the Group to industry guidelines, and tested the completeness and accuracy of the underlying data used in the forecast. We evaluated the reasonableness of management's key assumptions used in the calculations, which comprised of, among others, future prices of aluminum and alumina, expected production and sales volumes, production costs, operating expenses, terminal growth rates, and discount rates, by comparing them to external industry outlook reports from a number of sources and analyzing the historical accuracy of management's estimates. In addition, we involved our valuation specialists to assist us with assessing the appropriateness of the valuation methodologies and the reasonableness of assumptions used, including the discount rates.

We performed a sensitivity analysis around the key assumptions described above to evaluate the changes to the recoverable amounts of the CGUs resulting from changes in these assumptions, both individually and in aggregate.

We also assessed the adequacy of the Group's disclosures included in Note 5 to the consolidated financial statements regarding the key assumptions of impairment testing.

Recognition of deferred tax assets

Description of the Matter

At December 31, 2019, the Group had deferred tax assets on deductible temporary differences and tax losses carried forward of RMB1,522 million. As described in Notes 2.26, 3 and 10 to the consolidated financial statements, the Group recognized these deferred tax assets to the extent that it is probable that future taxable profits will be available to utilize the deferred tax assets.

Auditing management's recoverability assessment of deferred tax assets involved subjective estimation and complex auditor judgment because the forecast of future taxable profits is complex and judgmental and is based on significant assumptions, including future tax rates, the possible utilization of loss carry forwards and future taxable profits that are affected by unexpected changes in the tax law framework and future market or economic conditions.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the recoverability assessment of deferred tax assets including testing controls over management's review of the significant assumptions used in the forecast.

Among other audit procedures performed, we compared the tax rates and the possible utilization of loss carry forwards with the tax law framework and tested the completeness and accuracy of the underlying data used in the forecast. We tested the Group's scheduling of the timing and amount of reversal of taxable temporary differences.

We also evaluated management's significant assumptions in determining the future available taxable profits, for example, the future prices of aluminum and alumina, expected production and sales volumes, production costs and operating expenses by comparing them with the market trend forecasted by external industry analysts and analyzing the historical accuracy of management's estimates.

In addition, we involved our tax professionals to assist us in evaluating the technical merits from a tax perspective of management's analysis.

We also assessed the adequacy of the Group's disclosures included in Note 10 to the consolidated financial statements regarding deferred tax assets.

/s/ Ernst & Young Hua Ming LLP

We have served as the Group's auditor since 2012.
Beijing, the People's Republic of China
April 22, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and the Board of Directors of Aluminum Corporation of China Limited

Opinion on Internal Control Over Financial Reporting

We have audited Aluminum Corporation of China Limited's internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), (the "COSO criteria"). In our opinion, Aluminum Corporation of China Limited (the "Group") maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated statements of financial position of the Group as of December 31, 2018 and 2019, and the related consolidated statements of profit or loss and other comprehensive income, changes in equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and our report dated April 22, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

The Group's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Group's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Group in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young Hua Ming LLP

Beijing, the People's Republic of China
April 22, 2020

ALUMINUM CORPORATION OF CHINA LIMITED
CONSOLIDATED STATEMENTS OF FINANCIAL POSITION

As of December 31, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

	Notes	December 31,	December 31, 2019	
		2018	RMB'000	USD'000
ASSETS				
Non-current assets				
Intangible assets	5	12,879,365	13,764,460	1,977,141
Property, plant and equipment	6	106,249,116	103,331,456	14,842,635
Investment properties	7	1,156,006	1,503,266	215,931
Land use rights	19 (a)	4,306,865	—	—
Right-of-use assets	19 (b)	—	15,890,437	2,282,518
Investments in joint ventures	8 (a)	3,393,349	3,385,582	486,308
Investments in associates	8 (b)	6,363,462	9,512,401	1,366,371
Equity investments designated at fair value through other comprehensive income	9	1,729,825	2,239,251	321,648
Deferred tax assets	10	1,542,655	1,522,216	218,653
Other non-current assets	11	4,442,645	3,207,843	460,778
Total non-current assets		142,063,288	154,356,912	22,171,983
Current assets				
Inventories	12	20,459,668	19,515,420	2,803,214
Trade and notes receivables	13	8,104,017	7,393,123	1,061,956
Other current assets	14	9,025,514	9,237,063	1,326,821
Financial assets at fair value through profit or loss	36.2	16,141	3,503,175	503,200
Restricted cash and time deposits	15	2,165,288	1,305,781	187,564
Cash and cash equivalents	15	19,130,835	7,759,190	1,114,538
Total current assets		58,901,463	48,713,752	6,997,293
Total assets		200,964,751	203,070,664	29,169,276

ALUMINUM CORPORATION OF CHINA LIMITED
CONSOLIDATED STATEMENTS OF FINANCIAL POSITION (Continued)
As of December 31, 2018 and 2019
(Amounts expressed in thousands of RMB unless otherwise stated)

	Notes	December 31,	December 31, 2019	
		2018	RMB'000	USD'000
EQUITY AND LIABILITIES				
EQUITY				
Equity attributable to owners of the parent				
Share capital	16	14,903,798	17,022,673	2,445,154
Other reserves	17	40,367,573	39,853,906	5,724,655
Accumulated losses		(2,856,064)	(2,216,946)	(318,444)
		<u>52,415,307</u>	<u>54,659,633</u>	<u>7,851,365</u>
Non-controlling interests		15,254,312	16,065,427	2,307,654
Total equity		<u>67,669,619</u>	<u>70,725,060</u>	<u>10,159,019</u>
LIABILITIES				
Non-current liabilities				
Interest-bearing loans and borrowings	18	54,207,386	59,243,563	8,509,805
Other non-current liabilities	21	2,438,164	2,219,574	318,822
Deferred tax liabilities	10	1,812,805	1,712,739	246,020
Total non-current liabilities		<u>58,458,355</u>	<u>63,175,876</u>	<u>9,074,647</u>
Current liabilities				
Trade and notes payables	23	14,009,264	12,584,755	1,807,687
Other payables and accrued liabilities	22	11,567,152	12,442,184	1,787,208
Contract liabilities	4	1,579,322	1,638,826	235,403
Financial liabilities at fair value through profit or loss	36.2	1,766	805	116
Income tax payable		113,783	216,554	31,106
Interest-bearing loans and borrowings	18	47,565,490	42,286,604	6,074,090
Total current liabilities		<u>74,836,777</u>	<u>69,169,728</u>	<u>9,935,610</u>
Total liabilities		<u>133,295,132</u>	<u>132,345,604</u>	<u>19,010,257</u>
Total equity and liabilities		<u>200,964,751</u>	<u>203,070,664</u>	<u>29,169,276</u>
Net current liabilities		<u>15,935,314</u>	<u>20,455,976</u>	<u>2,938,317</u>
Total assets less current liabilities		<u>126,127,974</u>	<u>133,900,936</u>	<u>19,233,666</u>

The accompanying notes are an integral part of these financial statements.

Lu Dongliang
Director

Wang Jun
Chief Financial Officer

ALUMINUM CORPORATION OF CHINA LIMITED
CONSOLIDATED STATEMENTS OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

		2017	2018	2019	
	Note	RMB'000	RMB'000	RMB'000	USD'000
Continuing Operations					
Revenue	4	181,022,636	180,241,414	190,074,161	27,302,445
Cost of sales		(166,290,269)	(167,029,416)	(177,946,276)	(25,560,383)
Gross profit		14,732,367	13,211,998	12,127,885	1,742,062
Selling and distribution expenses		(2,372,966)	(2,496,933)	(1,673,139)	(240,331)
General and administrative expenses		(4,551,237)	(3,959,177)	(3,956,604)	(568,333)
Research and development expenses		(498,234)	(626,873)	(940,828)	(135,141)
Impairment loss on property, plant and equipment	6	(16,200)	(46,484)	(259,354)	(37,254)
Impairment losses on financial assets		—	(107,956)	(169,751)	(24,383)
Impairment losses on investments in joint ventures		—	(216,953)	—	—
Other income	26	89,873	135,367	79,469	11,415
Other gains, net	27	319,402	921,904	1,247,269	179,159
Finance income	28	706,690	492,234	261,151	37,512
Finance costs	28	(5,203,422)	(4,882,496)	(4,921,179)	(706,883)
Share of profits and losses of:					
Joint ventures	8 (a)	8,151	(199,452)	270,115	38,800
Associates	8 (b)	(165,249)	39,335	48,767	7,005
Profit before income tax	25	3,049,175	2,264,514	2,113,801	303,628
Income tax expense	31	(643,706)	(822, 519)	(625,720)	(89,879)
Profit for the year		2,405,469	1,441,995	1,488,081	213,749

ALUMINUM CORPORATION OF CHINA LIMITED
CONSOLIDATED STATEMENTS OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

	Note	2017	2018	2019	
		RMB'000	RMB'000	RMB'000	USD'000
Profit attributable to:					
Owners of the parent		1,413,221	707,460	850,999	122,238
Non-controlling interests		992,248	734,535	637,082	91,511
		<u>2,405,469</u>	<u>1,441,995</u>	<u>1,488,081</u>	<u>213,749</u>
Other comprehensive income, net of tax:					
Other comprehensive income that may be reclassified to profit or loss in subsequent periods:					
Available-for-sale investments:					
Changes in fair value		(5,206)	—	—	—
Reclassification adjustments for gains included in profit or loss-Gain on disposal		(45,039)	—	—	—
Income tax effect		11,180	—	—	—
Transfer out other comprehensive income of an associate		—	—	—	—
Exchange differences on translation of foreign operations		(634,793)	(120,756)	(32,323)	(4,643)
		<u>(673,858)</u>	<u>(120,756)</u>	<u>(32,323)</u>	<u>(4,643)</u>
Net other comprehensive income that may be reclassified to profit or loss in subsequent periods					
		<u>(673,858)</u>	<u>(120,756)</u>	<u>(32,323)</u>	<u>(4,643)</u>
Other comprehensive income that will not be reclassified to profit or loss in subsequent periods					
Equity investments designated at fair value through other comprehensive income:					
Changes in fair value		—	(15,491)	57,815	8,305
Income tax effect		—	3,769	(14,642)	(2,103)
		<u>—</u>	<u>(11,722)</u>	<u>43,173</u>	<u>6,202</u>
Net other comprehensive income that will not be reclassified to profit or loss in subsequent periods					
		<u>—</u>	<u>(11,722)</u>	<u>43,173</u>	<u>6,202</u>
Other comprehensive (loss) / income, net of tax					
		<u>(673,858)</u>	<u>(132,478)</u>	<u>10,850</u>	<u>1,559</u>
Total comprehensive income for the year					
		<u>1,731,611</u>	<u>1,309,517</u>	<u>1,498,931</u>	<u>215,308</u>
Attributable to:					
Owners of the parent		739,363	575,621	861,599	123,761
Non-controlling interests		992,248	733,896	637,332	91,547
		<u>1,731,611</u>	<u>1,309,517</u>	<u>1,498,931</u>	<u>215,308</u>
Basic and diluted earnings per share attributable to ordinary equity holders of the parent					
(expressed in RMB per share)	32	<u>0.087</u>	<u>0.034</u>	<u>0.037</u>	<u>0.0053</u>

Details of the dividends payable and proposed for the year are disclosed in Note 33 to the financial statements.

The accompanying notes are an integral part of these financial statements.

ALUMINUM CORPORATION OF CHINA LIMITED
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

	Attributable to owners of the parent										Non-controlling interests	Total equity
	Share capital (Note 16)	Share premium	Other capital reserves	Statutory surplus reserve	Special reserve	Gain on available-for-sale financial assets	Other equity instruments	Foreign currency translation reserve	Accumulated losses	Total		
At January 1, 2017	14,903,798	18,083,069	952,878	5,867,557	132,202	45,901	2,019,288	970,069	(4,634,619)	38,340,143	17,629,045	55,969,188
Adjustment due to business combinations under common control	—	40,000	—	—	—	—	—	—	(759)	39,241	—	39,241
At January 1, 2017	14,903,798	18,123,069	952,878	5,867,557	132,202	45,901	2,019,288	970,069	(4,635,378)	38,379,384	17,629,045	56,008,429
Profit for the year	—	—	—	—	—	—	—	—	1,413,221	1,413,221	992,248	2,405,469
Other comprehensive income for the year												
Changes in fair value of available-for-sale financial assets, net of tax	—	—	—	—	—	(4,758)	—	—	—	(4,758)	—	(4,758)
Disposal of available-for-sale financial assets, net of tax	—	—	—	—	—	(34,307)	—	—	—	(34,307)	—	(34,307)
Exchange differences on translation of foreign operations	—	—	—	—	—	—	—	(634,793)	—	(634,793)	—	(634,793)
Total comprehensive income for the year	—	—	—	—	—	(39,065)	—	(634,793)	1,413,221	739,363	992,248	1,731,611
Business combinations under common control (Note 38)	—	(242,564)	—	—	—	—	—	—	—	(242,564)	—	(242,564)
Disposal of subsidiaries	—	—	—	—	(6,149)	—	—	—	—	(6,149)	6,929	780
Disposal of equity interest in subsidiaries without loss of control	—	38,189	—	—	—	—	—	—	—	38,189	(38,189)	—
Deemed disposal of a subsidiary	—	—	—	—	—	—	—	—	—	—	(96,568)	(96,568)
Capital injection from non-controlling shareholders	—	1,887,824	—	—	—	—	—	—	—	1,887,824	10,831,897	12,719,721
Capital injection from the parent company	—	2,040	—	—	—	—	—	—	—	2,040	—	2,040
Acquisition of non-controlling interests	—	(980,725)	—	—	—	—	—	—	—	(980,725)	(432,564)	(1,413,289)
Acquisition of a subsidiary	—	—	—	—	—	—	—	—	—	—	416,353	416,353
Other appropriations	—	—	—	—	24,577	—	—	—	—	24,577	34,166	58,743
Share of reserves of joint ventures and associates	—	—	—	—	(3,696)	—	—	—	—	(3,696)	—	(3,696)
Repayment of senior perpetual securities	—	—	—	—	—	—	—	—	—	—	(2,584,682)	(2,584,682)
Other equity instruments' distribution	—	—	—	—	—	—	—	—	(110,000)	(110,000)	(391,933)	(501,933)
Dividends distributed by subsidiaries to non-controlling shareholders	—	—	—	—	—	—	—	—	—	—	(312,135)	(312,135)
Dividends distribution before business under common control	—	—	—	—	—	—	—	—	(780)	(780)	—	(780)
At December 31, 2017	<u>14,903,798</u>	<u>18,827,833</u>	<u>952,878</u>	<u>5,867,557</u>	<u>146,934</u>	<u>6,836</u>	<u>2,019,288</u>	<u>335,276</u>	<u>(3,332,937)</u>	<u>39,727,463</u>	<u>26,054,567</u>	<u>65,782,030</u>

ALUMINUM CORPORATION OF CHINA LIMITED
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

	Attributable to owners of the parent										Non-controlling interests	Total equity
	Capital reserves						Other equity instruments	Foreign currency translation reserve	Accumulated losses	Total		
	Share capital (Note 16)	Share premium	Other capital reserves	Statutory surplus reserve	Special reserve	Fair value reserve						
At December 31, 2017	14,903,798	18,787,833	952,878	5,867,557	146,934	6,836	2,019,288	335,276	(3,332,371)	39,688,029	26,054,567	65,742,596
Adjustment due to business combinations under common control	—	40,000	—	—	—	—	—	—	(566)	39,434	—	39,434
Effect of adoption of IFRS 9	—	—	—	—	—	10,835	—	—	(133,346)	(122,511)	(16,925)	(139,436)
At January 1, 2018	14,903,798	18,827,833	952,878	5,867,557	146,934	17,671	2,019,288	335,276	(3,466,283)	39,604,952	26,037,642	65,642,594
Profit for the year	—	—	—	—	—	—	—	—	707,460	707,460	734,535	1,441,995
Other comprehensive income for the year												
Changes in fair value of equity investments at fair value through other comprehensive income, net of tax	—	—	—	—	—	(11,083)	—	—	—	(11,083)	(639)	(11,722)
Exchange differences on translation of foreign operations	—	—	—	—	—	—	—	(120,756)	—	(120,756)	—	(120,756)
Total comprehensive income for the year	—	—	—	—	—	(11,083)	—	(120,756)	707,460	575,621	733,896	1,309,517
Business combinations under common control	—	(443,582)	—	—	—	—	—	—	—	(443,582)	—	(443,582)
Capital injection from non-controlling shareholders	—	78,271	—	—	—	—	—	—	—	78,271	759,350	837,621
Capital injection before business combinations under common control	—	69,885	—	—	—	—	—	—	—	69,885	—	69,885
Acquisition of non-controlling interests	—	(218)	—	—	—	—	—	—	—	(218)	(3,547)	(3,765)
Restructure of subsidiaries	—	(77,511)	—	—	—	—	—	—	—	(77,511)	77,511	—
Disposal of subsidiaries	—	—	—	—	—	—	—	—	—	—	(1,160)	(1,160)
Issuance of senior perpetual securities	—	—	—	—	—	—	1,988,000	—	—	1,988,000	—	1,988,000
Release of deferred government subsidies	—	—	2,200	—	—	—	—	—	—	2,200	—	2,200
Equity exchange arrangement	—	—	10,735,214	—	—	—	—	—	—	10,735,214	(10,735,214)	—
Other appropriations	—	—	—	—	8,119	—	—	—	—	8,119	(1,514)	6,605
Share of reserves of joint ventures and associates	—	—	—	—	2,051	—	—	—	—	2,051	—	2,051
Step acquisition of a subsidiary	—	—	—	—	(11,166)	—	—	—	—	(11,166)	—	(11,166)
Distribution of other equity instruments	—	—	—	—	—	—	(19,288)	—	(90,722)	(110,010)	(300,538)	(410,548)
Dividends distribution before business combinations under common control	—	—	—	—	—	—	—	—	(6,519)	(6,519)	—	(6,519)
Dividends distribution of subsidiaries to non-controlling shareholders	—	—	—	—	—	—	—	—	—	—	(605,416)	(605,416)
Acquisition of subsidiaries	—	—	—	—	—	—	—	—	—	—	1,468,435	1,468,435
Repayment of senior perpetual securities	—	—	—	—	—	—	—	—	—	—	(2,175,133)	(2,175,133)
At December 31, 2018	14,903,798	18,454,678	11,690,292	5,867,557	145,938	6,588	3,988,000	214,520	(2,856,064)	52,415,307	15,254,312	67,669,619

ALUMINUM CORPORATION OF CHINA LIMITED
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

	Attributable to owners of the parent											Total equity
	Capital reserves							Foreign currency translation reserve	Accumulated losses	Total	Non-controlling interests	
	Share capital (Note 16)	Share premium	Other capital reserves	Statutory surplus reserve	Special reserve	Fair value reserve	Other equity instruments					
At December 31, 2018	14,903,798	18,414,678	11,690,292	5,867,557	145,938	6,588	3,988,000	214,520	(2,816,481)	52,414,890	15,254,312	67,669,202
Adjustment due to business combinations under common control (Note 38)	—	40,000	—	—	—	—	—	—	(39,583)	417	—	417
At January 1, 2019	14,903,798	18,454,678	11,690,292	5,867,557	145,938	6,588	3,988,000	214,520	(2,856,064)	52,415,307	15,254,312	67,669,619
Profit for the year	—	—	—	—	—	—	—	—	850,999	850,999	637,082	1,488,081
Other comprehensive income for the year												
Changes in fair value of equity investments at fair value through other comprehensive income, net of tax	—	—	—	—	—	42,923	—	—	—	42,923	250	43,173
Exchange differences on translation of foreign operations	—	—	—	—	—	—	—	(32,323)	—	(32,323)	—	(32,323)
Total comprehensive income for the year	—	—	—	—	—	42,923	—	(32,323)	850,999	861,599	637,332	1,498,931
Business combinations under common control (Note 38)	—	(237)	—	—	—	—	—	—	—	(237)	—	(237)
Capital injection from non-controlling shareholders	—	—	4,144	—	—	—	—	—	—	4,144	706,970	711,114
Acquisition of non-controlling interests	—	—	149,322	—	—	—	—	—	—	149,322	(149,322)	—
Disposal of subsidiaries	—	—	—	—	(1,666)	—	—	—	119	(1,547)	(26,234)	(27,781)
Issuance of senior perpetual securities (Note 40)	—	—	—	—	—	—	1,499,104	—	—	1,499,104	—	1,499,104
Issuance of share capital (Note 16)	2,118,875	8,564,661	(10,735,214)	—	—	—	—	—	—	(51,678)	—	(51,678)
Other appropriations	—	—	—	—	(5,317)	—	—	—	—	(5,317)	(17,768)	(23,085)
Share of reserves of joint ventures and associates	—	—	—	—	936	—	—	—	—	936	—	936
Dividends distribution of subsidiaries to non-controlling shareholders	—	—	—	—	—	—	—	—	—	—	(199,215)	(199,215)
Distribution of other equity instruments	—	—	—	—	—	—	—	—	(212,000)	(212,000)	(140,648)	(352,648)
At December 31, 2019	17,022,673	27,019,102*	1,108,544*	5,867,557*	139,891*	49,511*	5,487,104*	182,197*	(2,216,946)	54,659,633	16,065,427	70,725,060

* These reserves accounts comprise the consolidated other reserves of RMB39,854 million (December 31, 2018: RMB40,368 million) in the consolidated statement of financial position.

The accompanying notes are an integral part of these financial statements.

ALUMINUM CORPORATION OF CHINA LIMITED
CONSOLIDATED STATEMENTS OF CASH FLOWS
For the years ended December 31, 2017, 2018 and 2019
(Amounts expressed in thousands of RMB unless otherwise stated)

	Note	2017	2018	2019	
		RMB'000	RMB'000	RMB'000	USD'000
Net cash flows from operating activities	34	13,207,140	13,032,076	12,473,489	1,791,705
Investing activities					
Purchases of intangible assets		(418,203)	(103,304)	(149,756)	(21,511)
Purchases of property, plant and equipment		(8,892,436)	(6,746,616)	(8,891,529)	(1,277,188)
Purchases of investment properties		—	—	(44,063)	(6,329)
Purchases of land use rights		(59,215)	(2,838)	—	—
Prepaid land lease payments		—	—	(6,034)	(867)
Proceeds from disposal of property, plant and equipment		460,982	564,791	1,132,839	162,722
Proceeds from disposal of intangible assets		11,730	—	5,764	828
Proceeds from disposal of land use rights		5,824	—	—	—
Proceeds from disposal of a joint venture and an associate		—	30,816	367,867	52,841
Purchase of financial products		—	—	(3,500,000)	(502,744)
Acquisition of subsidiaries		255,152	255,650	—	—
Proceeds from disposal and deemed disposal of subsidiaries and business, net of cash		5,631,298	6,558	23,797	3,418
Interest received from unpaid disposal proceeds		117,586	—	—	—
Interest received from loans and borrowings to others		118,015	—	—	—
Investments in joint ventures		(15,414)	(90,000)	(50,000)	(7,182)
Investments in associates		(857,317)	(266,300)	(2,653,244)	(381,115)
Purchase of investment from equity investments		(1,848,000)	—	—	—
Proceeds from/(purchase of) equity investments designated at fair value through other comprehensive income		—	198,000	(700)	(101)
Proceeds from dividends and disposal of equity investments		124,536	—	—	—
Dividend from equity investments designated at fair value through other comprehensive income		—	109,914	97,775	14,044
Dividend received		44,960	327,983	236,708	34,001
Decrease in time deposits		72,700	—	—	—
Cash paid for settlement of futures, options and forward foreign exchange contracts		93,677	(13,288)	(67,253)	(9,660)
Loans to related parties		(1,600,000)	—	—	—
Proceeds from disposal of financial assets at fair value through profit or loss		—	—	2,155	310
Loans repaid by related parties		1,010,169	32,215	—	—
Asset-related government grants received		145,825	167,314	103,373	14,849
Net cash flows used in investing activities		(5,598,131)	(5,529,105)	(13,392,301)	(1,923,684)

ALUMINUM CORPORATION OF CHINA LIMITED
CONSOLIDATED STATEMENTS OF CASH FLOWS (Continued)
For the years ended December 31, 2017, 2018 and 2019
(Amounts expressed in thousands of RMB unless otherwise stated)

	Note	2017 RMB'000	2018 RMB'000	2019 RMB'000	USD'000
Financing activities					
Proceeds from gold leasing arrangements		7,804,083	2,323,105	6,921,860	994,263
Share issue expense		—	—	(51,678)	(7,423)
Repayments of gold leasing arrangements		(4,000,000)	(7,519,283)	(1,607,905)	(230,961)
Proceeds from issuance of bonds and notes, net of issuance costs		3,478,550	13,185,034	37,965,385	5,453,387
Repayments of senior perpetual securities		(2,895,910)	(2,417,758)	—	—
Proceeds from issuance of perpetual securities, net of issuance costs		—	1,988,000	1,499,104	215,333
Repayments of bonds and notes		(16,300,000)	(21,815,000)	(22,400,000)	(3,217,559)
Senior perpetual securities' distribution paid		(501,933)	(410,548)	(352,648)	(50,655)
Drawdown of short-term and long-term loans		83,762,879	76,899,591	40,669,197	5,841,765
Repayments of short-term and long-term loans		(78,858,459)	(70,560,667)	(66,105,388)	(9,495,445)
Cash consideration paid for business combination under common control		(176,848)	(373,495)	(237)	(34)
Proceeds from sale and leaseback finance leases, net of deposit and transaction costs		1,000,036	1,204,843	—	—
Purchase of non-controlling interests		(1,413,289)	(3,765)	—	—
Capital injection from the parent company to the entity acquired under common control		—	69,885	—	—
Principal portion of lease payment		—	—	(3,032,106)	(435,535)
Finance lease instalment paid		(2,462,250)	(3,915,404)	—	—
Capital injection from non-controlling shareholders		12,718,761	837,621	711,114	102,145
Dividends paid by subsidiaries to non-controlling shareholders		(309,465)	(327,645)	(222,930)	(32,022)
Interest paid		(5,233,266)	(5,445,120)	(4,467,803)	(641,760)
Net cash flows used in financing activities		(3,387,111)	(16,280,606)	(10,474,035)	(1,504,501)
Net increase/(decrease) in cash and cash equivalents		4,221,898	(8,777,635)	(11,392,847)	(1,636,480)
Cash and cash equivalents at beginning of year		23,850,775	27,851,106	19,130,835	2,747,973
Effect of foreign exchange rate changes, net		(221,567)	57,364	21,202	3,045
Cash and cash equivalents at December 31	15	27,851,106	19,130,835	7,759,190	1,114,538

The accompanying notes are an integral part of these consolidated financial statements.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

1. GENERAL INFORMATION

Aluminum Corporation of China Limited (the “Company”) (中國鋁業股份有限公司) and its subsidiaries (together the “Group”) are principally engaged in the manufacture and distribution of alumina, primary aluminum and energy products. The Group is also engaged in the development of bauxite-related resources, the production, fabrication and distribution of bauxite, carbon and relevant non-ferrous metal products and the trading and logistics and transport services of non-ferrous metal products and coal products.

The Company is a joint stock company which is domiciled and was established on September 10, 2001 in the People’s Republic of China (the “PRC”) with limited liability. The address of its registered office is No. 62 North Xizhimen Street, Haidian District, Beijing, the PRC.

The Company’s shares have been listed on the Main Board of the Hong Kong Stock Exchange and the New York Stock Exchange since 2001. The Company also listed its A shares on the Shanghai Stock Exchange in 2007.

In the opinion of the directors, the ultimate holding company and the parent of the Company is Aluminum Corporation of China (“Chinalco”) (中國鋁業集團有限公司), a company incorporated and domiciled in the PRC and wholly owned by the State-owned Assets Supervision and Administration Commission of the State Council.

Information about subsidiaries

Particulars of the Company’s principal subsidiaries are as follows:

Name	Place of registration and business	Registered capital	Principal activities	Percentage of equity attributable to the Company	
				Direct	Indirect
Shanxi Huaxing Aluminum Co. Ltd. (“Shanxi Huaxing”) (山西華興鋁業有限公司)	PRC/Mainland China	1,850,000	Manufacture and distribution of alumina	60.00%	40.00%
Baotou Aluminum Co., Ltd. (“Baotou Aluminum”) (包頭鋁業有限公司)	PRC/Mainland China	2,245,510	Manufacture and distribution of primary aluminum, aluminum alloy and related fabricated products and carbon products	100.00%	—
China Aluminum International Trading Co., Ltd. (“Chalco Trading”) (中鋁國際貿易有限公司)	PRC/Mainland China	1,731,111	Import and export activities	100.00%	—
Chalco Shanxi New Material Co., Ltd. (“Shanxi New Material”) (中鋁山西新材料有限公司)	PRC/Mainland China	4,279,601	Manufacture and distribution of alumina, primary aluminum and anode carbon products and electricity generation and supply	85.98%	—
China Aluminum International Trading Group Co., Ltd. (“Chalco Trading Group”) (中鋁國際貿易集團有限公司)	PRC/Mainland China	1,030,000	Import and export activities	100.00%	—

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)
For the years ended December 31, 2017, 2018 and 2019
(Amounts expressed in thousands of RMB unless otherwise stated)

1. GENERAL INFORMATION (CONTINUED)

Information about subsidiaries (Continued)

Name	Place of registration and business	Registered capital	Principal activities	Percentage of equity attributable to the Company	
				Direct	Indirect
Zunyi Aluminum Co., Ltd. (遵義鋁業股份有限公司)	PRC/Mainland China	3,204,900	Manufacture and distribution of primary aluminum and alumina	67.45%	—
Chalco Hong Kong Ltd. ("Chalco Hong Kong") (中國鋁業香港有限公司)	Hong Kong	HKD849,940 in thousand	Overseas investments and alumina import and export activities	100.00%	—
Chalco Mining Co., Ltd. ("Chalco Mining") (中鋁礦業有限公司)	PRC/Mainland China	4,028,859	Manufacture, acquisition and distribution of bauxite mines, limestone ore, manufacturing and distribution of alumina	100.00%	—
Chalco Energy Co., Ltd. (中鋁能源有限公司)	PRC/Mainland China	1,384,398	Thermoelectric supply and investment management	100.00%	—
China Aluminum Ningxia Energy Group Co., Ltd. ("Ningxia Energy") (中鋁寧夏能源集團)	PRC/Mainland China	5,025,800	Thermal power, wind power and solar power generation, coal mining, and power-related equipment manufacturing	70.82%	—
Guizhou Huajin Aluminum Co., Ltd. ("Guizhou Huajin") (貴州華錦鋁業有限公司)	PRC/Mainland China	1,000,000	Manufacture and distribution of alumina	60.00%	—
Chalco Zhengzhou Research Institute of Non-ferrous Metal Co., Ltd. (中國鋁業鄭州有色金屬研究院有限公司)	PRC/Mainland China	214,858	Research and development services	100.00%	—
Chalco Shandong Co., Ltd. ("Chalco Shandong") (中鋁山東有限公司)	PRC/Mainland China	4,052,847	Manufacture and distribution of alumina	100.00%	—
Chalco Zhongzhou Aluminum Co., Ltd. ("Zhongzhou Aluminum") (中鋁中州鋁業有限公司)	PRC/Mainland China	5,071,235	Manufacture and distribution of alumina	100.00%	—
China Aluminum Logistics Group Corporation Co., Ltd. (中鋁物流集團有限公司)	PRC/Mainland China	964,291	Logistic transportation	100.00%	—

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

1. GENERAL INFORMATION (CONTINUED)

Information about subsidiaries (Continued)

Name	Place of registration and business	Registered capital	Principal activities	Percentage of equity attributable to the Company	
				Direct	Indirect
Chinalco Shanxi Jiaokou Xinghua Technology Ltd. ("Xinghua Technology") (中鋁集團山西交口興華科技股份有限公司)	PRC/Mainland China	588,182	Manufacture and distribution of primary aluminum	33.00%	33.00%
Chinalco Shanghai Company Limited ("Chinalco Shanghai") (中鋁(上海)有限公司)	PRC/Mainland China	968,300	Trading and engineering project management	100.00%	—
Shanxi China Huarun Co., Ltd. ("Shanxi Huarun") (山西中鋁華潤有限公司)	PRC/Mainland China	1,641,750	Manufacture and distribution of primary aluminum	43.39%	—
Guizhou Huaren New Material Co., Ltd. ("Guizhou Huaren") (貴州華仁新材料有限公司)	PRC/Mainland China	1,200,000	Manufacture and distribution of primary aluminum	40.00%	—
Chalco Materials Co. Ltd. (中鋁物資有限公司)	PRC/Mainland China	1,000,000	Import and export activities	100.00%	—

The above table lists the subsidiaries of the Company which, in the opinion of the directors, principally affected the results of the year or formed a substantial part of the net assets of the Group. To give details of the other subsidiaries would, in the opinion of the directors, result in particulars of excessive length.

* The English names represent the best effort made by management of the Group in translating the subsidiaries' Chinese name as they do not have any official English names.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES

The principal accounting policies applied in the preparation of these financial statements are set out below. These policies have been consistently applied to all the years presented, unless otherwise stated.

2.1 Basis of preparation

The consolidated financial statements have been prepared in accordance with International Financial Reporting Standards (“IFRSs”) issued by the International Accounting Standards Board (the “IASB”) and the disclosure requirements of the Hong Kong Companies Ordinance. They have been prepared on a historical cost basis, except for equity investments at fair value through other comprehensive income, financial assets and liabilities at fair value through profit or loss and debt instruments at fair value through other comprehensive income which have been measured at fair value.

These financial statements are presented in thousands of Renminbi (“RMB”) unless otherwise stated.

Going concern

As at December 31, 2019, the Group’s current liabilities exceeded its current assets by approximately RMB20,456 million (December 31, 2018: RMB15,935 million). The directors of the Company have considered the Group’s available sources of funds as follows:

- The Group’s expected net cash inflows from operating activities in 2020;
- Unutilized banking facilities of approximately RMB118,084 million as at December 31, 2019, of which amounts totalling RMB108,360 million will be subject to renewal during the next 12 months. The directors of the Company are confident that these banking facilities could be renewed upon expiration based on the Group’s past experience and good credit standing; and
- Other available sources of financing from banks and other financial institutions given the Group’s credit history.

The directors of the Company believe that the Group has adequate resources to continue operations for the foreseeable future of not less than 12 months from December 31, 2019. The directors of the Company therefore are of the opinion that it is appropriate to adopt the going concern basis in preparing the consolidated financial statements.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.1 Basis of preparation (Continued)

Consolidation

The consolidated financial statements comprise the financial statements of the Company and all of its subsidiaries for the year ended December 31, 2019. Control is achieved when the Group is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee. Specifically, the Group controls an investee if and only if the Group has:

- Power over the investee (i.e., existing rights that give it the current ability to direct the relevant activities of the investee);
- Exposure, or rights, to variable returns from its involvement with the investee; and
- The ability to use its power over the investee to affect its returns.

Generally, there is a presumption that a majority of voting rights result in control. To support this presumption and when the Group has less than a majority of the voting or similar rights of an investee, the Group considers all relevant facts and circumstances in assessing whether it has power over an investee, including:

- The contractual arrangement with the other vote holders of the investee;
- Rights arising from other contractual arrangements; and
- The Group's voting rights and potential voting rights.

The Group reassesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control. Consolidation of a subsidiary begins when the Group obtains control over the subsidiary and ceases when the Group loses control of the subsidiary. Assets, liabilities, income and expenses of a subsidiary acquired or disposed of during the year are included in the consolidated statement of financial position and consolidated statement of profit and loss and other comprehensive income from the date the Group gains control until the date the Group ceases to control the subsidiary.

Profit or loss and each component of other comprehensive income ("OCI") are attributed to the equity holders of the parent of the Group and to the non-controlling interests, even if this results in the non-controlling interests having a deficit balance. When necessary, adjustments are made to the financial statements of subsidiaries to bring their accounting policies into line with the Group's accounting policies. All intra-group assets and liabilities, equity, income, expenses and cash flows relating to transactions between members of the Group are eliminated in full on consolidation.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.1 Basis of preparation (Continued)

Consolidation (Continued)

A change in the ownership interest of a subsidiary, without a loss of control, is accounted for as an equity transaction. If the Group loses control over a subsidiary, it:

- Derecognizes the assets (including goodwill) and liabilities of the subsidiary;
- Derecognizes the carrying amount of any non-controlling interests;
- Derecognizes the cumulative translation differences recorded in equity;
- Recognizes the fair value of the consideration received;
- Recognizes the fair value of any investment retained;
- Recognizes any surplus or deficit in profit or loss; and
- Reclassifies the parent's share of components previously recognized in OCI to profit or loss or retained earnings, as appropriate, as would be required if the Group had directly disposed of the related assets or liabilities.

(a) Merger accounting for business combinations under common control

The consolidated financial statements incorporate the financial statements of the combining entities or businesses in business combination under common control as if they had been combined from the date when the combining entities or businesses first came under the control of the ultimate holding company.

The net assets of the combining entities or businesses are consolidated using the carrying amount from the ultimate holding company's perspective. No amount is recognized for goodwill or excess of the Group's interest in the book value of the net assets over cost at the time of the common control combination, to the extent of the continuation of the ultimate holding company's interest.

The consolidated statement of comprehensive income includes the results of each of the combining entities or businesses from the earliest date presented or since the date when the combining entities or businesses first came under common control, where this is a shorter period, regardless of the date of the common control combination.

The comparative financial data have been restated to reflect the business combinations under common control occurred during this year as disclosed in Note 38.

Transaction costs, including professional fees, registration fees, costs of furnishing information to shareholders, costs or losses incurred in combining operations of the previously separate businesses and other costs incurred in relation to the common control combination that is to be accounted for by using the merger accounting method are recognized as expenses in the period in which they are incurred.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.1 Basis of preparation (Continued)

Consolidation (Continued)

(b) Acquisition method of accounting for other business combinations and goodwill

The acquisition method of accounting is used to account for the acquisition of subsidiaries by the Group, other than common control combinations. The consideration transferred is measured at the acquisition date fair value which is the sum of acquisition date fair value of assets transferred by the Group, liabilities assumed by the Group to the former owner of the acquiree and the equity interests issued by the Group in exchange for control of the acquiree. The consideration transferred included the fair value of any assets and liabilities resulting from a contingent consideration arrangement. Acquisition-related costs are expensed as incurred. Identifiable assets acquired and liabilities and contingent liabilities assumed in a business combination are measured initially at fair value at the acquisition date. All other components of non-controlling interests are measured at fair value. For each business combination, the Group elects whether to measure the non-controlling interests in the acquiree that are present ownership interests and entitle their holders to a proportional share of net assets in the event of liquidation at fair value or at the proportional share of the acquiree's identifiable net assets.

When the Group acquires a business, it assesses the financial assets and liabilities assumed for appropriate classification and designation in accordance with the contractual terms, economic circumstances and pertinent conditions as at the acquisition date. This includes the separation of embedded derivatives in host contracts of the acquiree.

If the business combination is achieved in stages, the previously held equity interest is remeasured at its acquisition date fair value and any resulting gain or loss is recognized in profit or loss.

Goodwill is initially measured at cost, being the excess of the aggregate of the consideration transferred, the amount recognized for non-controlling interests and any fair value of the Group's previously held equity interests in the acquiree over the identifiable net assets acquired and liabilities assumed. If the sum of this consideration and other items is lower than the fair value of the net assets acquired, the difference is, after reassessment, recognized in profit or loss as a gain on bargain purchase.

After initial recognition, goodwill is measured at cost less any accumulated impairment losses. Goodwill is tested for impairment at least annually or more frequently if events or changes in circumstances indicate that the carrying value may be impaired. The Group performs its annual impairment test of goodwill as at December 31. For the purpose of impairment testing, goodwill acquired in a business combination is, from the acquisition date, allocated to each of the Group's cash-generating units, or groups of cash-generating units, that are expected to benefit from the synergies of the combination, irrespective of whether other assets or liabilities of the Group are assigned to those units or groups of units.

Impairment is determined by assessing the recoverable amount of the cash-generating unit (group of cash-generating units) to which the goodwill relates. Where the recoverable amount of the cash-generating unit (group of cash-generating units) is less than the carrying amount, an impairment loss is recognized. An impairment loss recognized for goodwill is not reversed in a subsequent period.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.1 Basis of preparation (Continued)

Consolidation (Continued)

(b) Acquisition method of accounting for other business combinations and goodwill (Continued)

Where goodwill has been allocated to a cash-generating unit (or group of cash-generating units) and part of the operation within that unit is disposed of, the goodwill associated with the operation disposed of is included in the carrying amount of the operation when determining the gain or loss on the disposal. Goodwill disposed of in these circumstances is measured based on the relative value of the operation disposed of and the portion of the cash-generating unit retained.

(c) Subsidiaries

A subsidiary is an entity, directly or indirectly, controlled by the Company. Control is achieved when the Group is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee (i.e., existing rights that give the Group the current ability to direct the relevant activities of the investee).

When the Company has, directly or indirectly, less than a majority of the voting or similar rights of an investee, the Group considers all relevant facts and circumstances in assessing whether it has power over an investee, including:

- (a) the contractual arrangement with the other vote holders of the investee;
- (b) rights arising from other contractual arrangements; and
- (c) the Group's voting rights and potential voting rights.

Subsidiaries are fully consolidated from the date on which control is transferred to the Group. They are de-consolidated from the date that control ceases.

Inter-company transactions, balances, income and expenses on transactions between group companies are eliminated. Profits and losses resulting from inter-company transactions that are recognized in assets are also eliminated. Amounts reported by subsidiaries have been adjusted where necessary in the consolidated financial statements to conform with the policies adopted by the Group.

In the Company's statement of financial position, as permitted under IFRS 1, the investments in subsidiaries acquired prior to January 1, 2008, being the date of transition to IFRS, are stated at deemed cost as required under the previously adopted accounting standards. Subsidiaries acquired after that date that are not classified as held for sale in accordance with IFRS 5 Non-current Assets Held for Sale and Discontinued Operations are stated at cost less provision for impairment losses. The results of subsidiaries are accounted for by the Company on the basis of dividends received and receivable.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.2 Changes in accounting policies and disclosures

The Group has adopted the following new and revised IFRSs for the first time for the current year's financial statements.

Amendments to IFRS 9	<i>Prepayment Features with Negative Compensation</i>
IFRS 16	<i>Leases</i>
Amendments to IAS 19	<i>Plan Amendment, Curtailment or Settlement</i>
Amendments to IAS 28	<i>Long-term Interests in Associates and Joint Ventures</i>
Amendments to IFRS 10 and IAS 28 (2011)	<i>Sale or Contribution of Assets between an Investor and its Associate or Joint Venture</i>
IFRIC Interpretation 23	<i>Uncertainty over Income Tax Treatments</i>
Annual Improvements 2015-2017 Cycle	<i>Amendments to IFRS 3, IFRS 11, IAS 12 and IAS 23</i>

Except for the amendments to IFRS 9 and IFRS 19 and Annual Improvements to IFRS 2015–2017 Cycle, which are not relevant to the preparation of the Group's financial statements, the nature and the impact of the new and revised IFRSs are described below:

(a) IFRS 16 Leases

IFRS 16 replaces IAS 17 Leases, IFRIC 4 Determining whether an Arrangement contains a Lease, SIC 15 Operating Leases-Incentives and SIC 27 Evaluating the Substance of Transactions Involving the Legal Form of a Lease. The standard sets out the principles for the recognition, measurement, presentation and disclosure of leases and requires lessees to account for all leases under a single on-balance sheet model to recognize and measure right-of-use assets and lease liabilities, except for certain recognition exemptions. Lessor accounting under IFRS 16 is substantially unchanged from IAS 17. Lessors continue to classify leases as either operating or finance leases using similar principles as in IAS 17. Therefore, IFRS 16 did not have any financial impact on leases where the Group is the lessor.

The Group has adopted IFRS 16 using the modified retrospective method of adoption with the date of initial application of January 1, 2019. Under this method, the standard has been applied retrospectively with the cumulative effect of initial adoption recognized as an adjustment to the opening balance of retained earnings at January 1, 2019, and the comparative information for 2018 was not restated and continues to be reported under IAS 17 and related interpretations.

New definition of a lease

Under IFRS 16, a contract is, or contains, a lease if the contract conveys a right to control the use of an identified asset for a period of time in exchange for consideration. Control is conveyed where the customer has both the right to obtain substantially all of the economic benefits from use of the identified asset and the right to direct the use of the identified asset. The Group elected to use the transition practical expedient allowing the standard to be applied only to contracts that were previously identified as leases applying IAS 17 and IFRIC 4 at the date of initial application. Contracts that were not identified as leases under IAS 17 and IFRIC 4 were not reassessed. Therefore, the definition of a lease under IFRS 16 has been applied only to contracts entered into or changed on or after January 1, 2019.

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.2 Changes in accounting policies and disclosures (Continued)

(a) IFRS 16 Leases (Continued)

As a lessee- Leases previously classified as operating leases

Nature of the effect of adoption of IFRS 16

The Group has lease contracts for various items of property, machinery, vehicles and other equipment. As a lessee, the Group previously classified leases as either finance leases or operating leases based on the assessment of whether the lease transferred substantially all the rewards and risks of ownership of assets to the Group. Under IFRS 16, the Group applies a single approach to recognize and measure right-of-use assets and lease liabilities for all leases, except for two elective exemptions for leases of low-value assets (elected on a lease-by-lease basis) and leases with a lease term of 12 months or less ("short-term leases") (elected by class of underlying asset). Instead of recognising rental expenses under operating leases on a straight-line basis over the lease term commencing from January 1, 2019, the Group recognizes depreciation (and impairment, if any) of the right-of-use assets and interest accrued on the outstanding lease liabilities (as finance costs).

Impacts on transition

Lease liabilities at January 1, 2019 were recognized based on the present value of the remaining lease payments, discounted using the incremental borrowing rate at January 1, 2019 and included in interest-bearing loans and borrowings. The right-of-use assets were measured at the amount of the lease liability, adjusted by the amount of any prepaid or accrued lease payments relating to the lease recognized in the consolidated statement of financial position immediately before January 1, 2019.

All these assets were assessed for any impairment based on IAS 36 on that date. The Group elected to present the right-of-use assets separately in the statement of financial position. This includes the lease assets recognized previously under finance leases of RMB6,721 million that were reclassified from property, plant and equipment, land use right of RMB4,307 million that were disclosed separately in the statement of financial position, and prepaid rental of RMB20 million that were included in other non-current assets.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.2 Changes in accounting policies and disclosures (Continued)

(a) IFRS 16 Leases (Continued)

As a lessee- Leases previously classified as operating leases (Continued)

Impacts on transition (Continued)

The Group has used the following elective practical expedients when applying IFRS16 at January 1, 2019:

- Applied the short-term leases exemptions to leases with a lease term that ends within 12 months from the date of initial application
- Applying a single discount rate to a portfolio of leases with reasonably similar characteristics when measuring the lease liabilities at January 1, 2019
- Using hindsight in determining the lease term where the contract contains options to extend or terminate the lease
- and excluding initial direct costs from the measurement of the right-of-use assets at the date of initial application

The Group did not change the initial carrying amounts of recognized assets and liabilities at the date of initial application for leases previously classified as finance leases. Accordingly, the carrying amounts of the right-of-use assets and the lease liabilities at January 1, 2019 were the carrying amounts of the recognized assets and liabilities (i.e., finance lease payables) measured under IAS 17.

The impact arising from the adoption of IFRS16 at January 1, 2019 is as follows:

	Increase/(decrease) RMB'000
Assets	
Increase in right-of-use assets	17,976,851
Decrease in property, plant and equipment	(6,720,610)
Decrease in land use rights	(4,306,865)
Decrease in other non-current assets	(20,323)
Increase in total assets	<u>6,929,053</u>
Liabilities	
Increase in Interest-bearing loans and borrowings	11,010,323
Decrease in finance lease payables	(4,081,270)
Increase in total liabilities	<u>6,929,053</u>
Decrease in retained earnings	—
Decrease in non-controlling interests	—

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.2 Changes in accounting policies and disclosures (Continued)

(a) IFRS 16 Leases (Continued)

As a lessee- Leases previously classified as operating leases (Continued)

Impacts on transition (Continued)

The lease liabilities as at January 1, 2019 reconciled to the operating lease commitments as at December 31, 2018 is as follows:

	Increase/(decrease) RMB'000
Operating lease commitments as at December 31, 2018	12,989,524
Less: Commitments relating to short-term leases, low-value assets leases and those leases with a remaining lease term ending on or before December 31, 2019	59,819
Undiscounted Operating lease commitments as at January 1, 2019 under IFRS 16	<u>12,929,705</u>
 Weighted average incremental borrowing rate as at January 1, 2019	 4.97%
Discounted operating lease commitments as at January 1, 2019 under IFRS 16	6,929,053
Add: Recognized Finance leases as at December 31, 2018	4,081,270
Lease liabilities as at January 1, 2019	<u><u>11,010,323</u></u>

(b) Amendments to IAS 28

Amendments to IAS 28 clarify that the scope exclusion of IFRS 9 only includes interests in an associate or joint venture to which the equity method is applied and does not include long-term interests that in substance form part of the net investment in the associate or joint venture, to which the equity method has not been applied. Therefore, an entity applies IFRS 9, rather than IAS 28, including the impairment requirements under IFRS 9, in accounting for such long-term interests. IAS 28 is then applied to the net investment, which includes the long-term interests, only in the context of recognising losses of an associate or joint venture and impairment of the net investment in the associate or joint venture. The Group assessed its business model for its long-term interests in associates and joint ventures upon adoption of the amendments on January 1, 2019 and concluded that the long-term interests in associates and joint ventures continue to be measured at amortized cost in accordance with IFRS 9. Accordingly, the amendments did not have any impact on financial position or performance of the Group.

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.2 Changes in accounting policies and disclosures (Continued)

(c) IFRIC 23

IFRIC 23 addresses the accounting for income taxes (current and deferred) when tax treatments involve uncertainty that affects the application of IAS 12 (often referred to as “uncertain tax positions”). The interpretation does not apply to taxes or levies outside the scope of IAS 12, nor does it specifically include requirements relating to interest and penalties associated with uncertain tax treatments. The interpretation specifically addresses (i) whether an entity considers uncertain tax treatments separately; (ii) the assumptions an entity makes about the examination of tax treatments by taxation authorities; (iii) how an entity determines taxable profits or tax losses, tax bases, unused tax losses, unused tax credits and tax rates; and (iv) how an entity considers changes in facts and circumstances. Upon adoption of the interpretation, the Group assessed whether it has any uncertain tax positions arising from transactions during the year. Based on the Group’s assessment, the directors are of opinion that the eventual outcome of the uncertainty position shall not have a material adverse financial effect.

(d) Amendments to IFRS 10 and IAS 28

Amendments to IFRS 10 and IAS 28 (2011) address an inconsistency between the requirements in IFRS 10 and in IAS 28 (2011) in dealing with the sale or contribution of assets between an investor and its associate or joint venture. The amendments require a full recognition of a gain or loss when the sale or contribution of assets between an investor and its associate or joint venture constitutes a business. For a transaction involving assets that do not constitute a business, a gain or loss resulting from the transaction is recognized in the investor’s profit or loss only to the extent of the unrelated investor’s interest in that associate or joint venture. The amendments are to be applied prospectively.

The Group adopted the amendments on January 1, 2019, and assessed the sale or contribution of assets transaction with its associate or joint venture. The amendments did not have any significant impact on the Group’s financial statements.

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.3 Issued but not yet effective International Financial Reporting Standards

The Group has not applied the following new and revised IFRSs that have been issued but are not yet effective, in these financial statements.

Amendments to IFRS 3	<i>Definition of a Business¹</i>
Amendments to IFRS 9, IAS 39 and IFRS 7	<i>Interest Rate Benchmark Reform¹</i>
IFRS 17	<i>Insurance Contracts²</i>
Amendments to IAS 1 and IAS 8	<i>Definition of Material¹</i>

¹ Effective for annual periods beginning on or after January 1, 2020.

² Effective for annual periods beginning on or after January 1, 2021.

Further information about those IFRSs that are expected to be applicable to the Group is described below.

Amendments to IAS 1 and IAS 8 provide a new definition of material. The new definition states that information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of general purpose financial statements make on the basis of those financial statements. The amendments clarify that materiality will depend on the nature or magnitude of information. A misstatement of information is material if it could reasonably be expected to influence decisions made by the primary users. The Group expects to adopt the amendments prospectively from January 1, 2020. The amendments are not expected to have any significant impact on the Group's financial statements.

Amendments to IFRS 3 clarify and provide additional guidance on the definition of a business. The amendments clarify that for an integrated set of activities and assets to be considered a business, it must include, at a minimum, an input and a substantive process that together significantly contribute to the ability to create output. A business can exist without including all of the inputs and processes needed to create outputs. The amendments remove the assessment of whether market participants are capable of acquiring the business and continue to produce outputs. Instead, the focus is on whether acquired inputs and acquired substantive processes together significantly contribute to the ability to create outputs. The amendments have also narrowed the definition of outputs to focus on goods or services provided to customers, investment income or other income from ordinary activities. Furthermore, the amendments provide guidance to assess whether an acquired process is substantive and introduce an optional fair value concentration test to permit a simplified assessment of whether an acquired set of activities and assets is not a business. The Group expects to adopt the amendments prospectively from January 1, 2020. Since the amendments apply prospectively to transactions or other events that occur on or after the date of first application, the Group will not be affected by these amendments on the date of transition.

Amendments to IFRS 9, IAS 39 and IFRS 7 address the effects of interbank offered rate reform on financial reporting. The amendments provide temporary reliefs which enable hedge accounting to continue during the period of uncertainty before the replacement of an existing interest rate benchmark. In addition, the amendments require companies to provide additional information to investors about their hedging relationships which are directly affected by these uncertainties. The amendments are effective for annual periods beginning on or after January 1, 2020. Early application is permitted. The amendments are not expected to have any significant impact on the Group's financial statements.

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.4 Investments in associates and joint ventures

An associate is an entity over which the Group has significant influence. Significant influence is the power to participate in the financial and operating policy decisions of the investee, but is not control or joint control over those policies.

A joint venture is a type of joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the joint venture. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require the unanimous consent of the parties sharing control.

The Group's investments in associates and joint ventures are stated in the consolidated statement of financial position at the Group's share of net assets under the equity method of accounting, less any impairment losses. Adjustments are made to bring into line any dissimilar accounting policies that may exist. The Group's share of the post-acquisition results and other comprehensive income of associates and joint ventures is included in the consolidated statement of profit or loss and other comprehensive income. In addition, when there has been a change recognized directly in the equity of the associate or joint venture, the Group recognizes its share of any changes, when applicable, in the consolidated statement of changes in equity. Unrealized gains and losses resulting from transactions between the Group and its associates or joint ventures are eliminated to the extent of the Group's investments in the associates or joint ventures, except where unrealized losses provide evidence of an impairment of the assets transferred. Goodwill arising from the acquisition of associates or joint ventures is included as part of the Group's investments in associates or joint ventures.

After application of the equity method, the Group determine whether it is necessary to recognize an impairment loss on its investment in its associate and joint venture in the profit or loss. At each reporting date, the Group determines whether there is objective evidence that the investment in the associate or joint venture is impaired. If there is such evidence, the Group calculates the amount of impairment as the difference between the recoverable amount of the associate or joint venture and its carrying value, then recognizes the loss in the profit or loss.

If an investment in an associate becomes an investment in a joint venture or vice versa, the retained interest is not remeasured. Instead, the investment continues to be accounted for under the equity method. In all other cases, upon loss of significant influence over the associate or joint control over the joint venture, the Group measures and recognizes any retained investment at its fair value. Any difference between the carrying amount of the associate or joint venture upon loss of significant influence or joint control and the fair value of the retained investment and proceeds from disposal is recognized in profit or loss.

When an investment in an associate or a joint venture is classified as held for sale, it is accounted for in accordance with IFRS 5 *Non-current Assets Held for Sale and Discontinued Operations*.

ALUMINUM CORPORATION OF CHINA LIMITED
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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.5 Segment reporting

Operating segments are reported in a manner consistent with the internal reporting provided to the chief operating decision-makers. The chief operating decision-makers, who are responsible for allocating resources and assessing the performance of the operating segments, have been identified as the presidents of the Company that make strategic decisions.

2.6 Related parties

A party is considered to be related to the Group if:

(a) the party is a person or a close member of that person's family and that person:

- (i) has control or joint control over the Group;
- (ii) has a significant influence over the Group; or
- (iii) is a member of the key management personnel of the Group or of a parent of the Group;

or

(b) the party is an entity where any of the following conditions applies:

- (iv) the entity and the Group are members of the same group;
- (v) one entity is an associate or joint venture of the other entity (or of a parent, subsidiary or fellow subsidiary of the other entity);
- (vi) the entity and the Group are joint ventures of the same third party;
- (vii) one entity is a joint venture of a third entity and the other entity is an associate of the third entity;
- (viii) the entity is a post-employment benefit plan for the benefit of employees of either the Group or an entity related to the Group; (If the Group is itself a plan) and the sponsoring employers of the post-employment benefit plan;
- (ix) a person identified in (a) (i) has significant influence over the entity or is a member of the key management personnel of the entity (or of a parent of the entity); and
- (x) the entity, or any member of a group of which it is a part, provides key management personnel services to the Group or to the parent of the Group.
- (xi) the entity, or any member of a group of which it is a part, provides key management personnel services to the Group or to the parent of the Group..

ALUMINUM CORPORATION OF CHINA LIMITED
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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.7 Fair value measurement

The Group measures its derivative financial instruments and equity investments at fair value at the end of each reporting period. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value measurement is based on the presumption that the transaction to sell the asset or transfer the liability takes place either in the principal market for the asset or liability, or in the absence of a principal market, in the most advantageous market for the asset or liability. The principal or the most advantageous market must be accessible by the Group. The fair value of an asset or a liability is measured using the assumptions that market participants would use when pricing the asset or liability, assuming that market participants act in their economic best interest.

A fair value measurement of a non-financial asset takes into account a market participant's ability to generate economic benefits by using the asset in its highest and best use or by selling it to another market participant that would use the asset in its highest and best use.

The Group uses valuation techniques that are appropriate in the circumstances and for which sufficient data are available to measure fair value, maximizing the use of relevant observable inputs and minimizing the use of unobservable inputs.

All assets and liabilities for which fair value is measured or disclosed in the financial statements are categorized within the fair value hierarchy, described as follows, based on the lowest level input that is significant to the fair value measurement as a whole:

Level 1 — Based on quoted (unadjusted) prices in active markets for identical assets or liabilities

Level 2 — Based on valuation techniques for which the lowest level input that is significant to the fair value measurement is observable, either directly or indirectly

Level 3 — Based on valuation techniques for which the lowest level input that is significant to the fair value measurement is unobservable

For assets and liabilities that are recognized in the financial statements on a recurring basis, the Group determines whether transfers have occurred between levels in the hierarchy by re-assessing categorization (based on the lowest level input that is significant to the fair value measurement as a whole) at the end of each reporting period.

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.8 Impairment of non-financial assets

Where an indication of impairment exists, or when annual impairment testing for an asset is required (other than inventories, deferred tax assets, non-current assets classified as held for sales and goodwill or intangible assets with indefinite useful life), the asset's recoverable amount is estimated. An asset's recoverable amount is the higher of the asset's or cash-generating unit's value in use and its fair value less costs of disposal, and is determined for an individual asset, unless the asset does not generate cash inflows that are largely independent of those from other assets or groups of assets, in which case the recoverable amount is determined for the cash-generating unit to which the asset belongs.

An impairment loss is recognized only if the carrying amount of an asset exceeds its recoverable amount. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. An impairment loss is charged to profit or loss in the period in which it arises in those expense categories consistent with the function of the impaired asset.

An assessment is made at the end of each reporting period as to whether there is an indication that previously recognized impairment losses may no longer exist or may have decreased. If such an indication exists, the recoverable amount is estimated. A previously recognized impairment loss of an asset other than goodwill is reversed only if there has been a change in the estimates used to determine the recoverable amount of that asset, but not to an amount higher than the carrying amount that would have been determined (net of any depreciation/amortization) had no impairment loss been recognized for the asset in prior years. A reversal of such an impairment loss is credited to profit or loss in the period in which it arises.

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.9 Foreign currency translation

Functional and presentation currency

Items included in the financial statements of each of the Group's entities are measured using the currency of the primary economic environment in which the entity operates (the "functional currency"). The consolidated financial statements are presented in RMB, which is the Company's functional currency and the Group's presentation currency.

Transactions and balances

Foreign currency transactions recorded by the entities in the Group are initially recorded using their respective functional currency rates prevailing at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies are translated at the functional currency rates of exchange ruling at the end of the reporting period. Differences arising on settlement or translation of monetary items are recognized in profit or loss.

Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rates at the dates of the initial transactions. Non-monetary items measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value was measured. The gain or loss arising on translation of a non-monetary item measured at fair value is treated in line with the recognition of the gain or loss on change in fair value of the item.

In determining the exchange rate on initial recognition of the related asset, expense or income on the derecognition of a non-monetary asset or non-monetary liability relating to an advance consideration, the date of initial transaction is the date on which the Group initially recognizes the non-monetary asset or non-monetary liability arising from the advance consideration. If there are multiple payments or receipts in advance, the Group determines the transaction date for each payment or receipt of the advance consideration.

Group companies

The results and financial positions of all the group entities (none of which has the currency of a hyper-inflationary economy) that has a functional currency different from the presentation currency are translated into the presentation currency as follows:

- (i) assets and liabilities in each statement of financial position presented are translated at the closing rates at the end of the reporting period;
- (ii) income and expenses in each statement of profit and loss and other comprehensive income are translated at average exchange rates (unless this average is not a reasonable approximation of the cumulative effect of the rates prevailing on the transaction dates, in which case income and expenses are translated at the rates at the dates of the transactions); and
- (iii) all resulting exchange differences are recognized in other comprehensive income. Upon disposal of a foreign operation, the other comprehensive income related to the foreign operation is reclassified to profit or loss.

Goodwill and fair value adjustments to the carrying amounts of assets and liabilities arising on the acquisition of a foreign entity are treated as assets and liabilities of the foreign entity and translated at the closing rate. Exchange differences arising are recognized in other comprehensive income.

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.10 Property, plant and equipment

Property, plant and equipment, other than construction in progress, are stated at cost less accumulated depreciation and any impairment losses. When an item of property, plant and equipment is classified as held for sale or when it is part of a disposal group classified as held for sale, it is not depreciated and is accounted for in accordance with IFRS 5. The cost of an item of property, plant and equipment comprises its purchase price and any directly attributable costs of bringing the asset to its working condition and location for its intended use.

Expenditure incurred after items of property, plant and equipment have been put into operation, such as repairs and maintenance, is normally charged to profit or loss in the period in which it is incurred. In situations where the recognition criteria are satisfied, the expenditure for a major inspection is capitalized in the carrying amount of the asset as a replacement. Where significant parts of property, plant and equipment are required to be replaced at intervals, the Group recognizes such parts as individual assets with specific useful lives and depreciates them accordingly.

Depreciation is calculated on the straight-line basis to write off the cost of each item of property, plant and equipment to its residual value over its estimated useful life. The principal annual rates used for this purpose are as follows:

Buildings	8 - 45 years
Machinery	3 - 30 years
Transportation facilities	6 - 10 years
Office and other equipment	3 - 10 years

Where parts of an item of property, plant and equipment have different useful lives, the cost of that item is allocated on a reasonable basis among the parts and each part is depreciated separately. Residual values, useful lives and the depreciation method are reviewed, and adjusted if appropriate, at least at each financial year end.

An item of property, plant and equipment including any significant part initially recognized is derecognized upon disposal or when no future economic benefits are expected from its use or disposal. Any gain or loss on disposal or retirement recognized in profit or loss in the year the asset is derecognized is the difference between the net sales proceeds and the carrying amount of the relevant asset.

Construction in progress ("CIP") represents buildings under construction, which is stated at cost less any impairment losses, and is not depreciated. Cost comprises the direct costs of construction and capitalized borrowing costs on related borrowed funds during the period of construction. CIP is reclassified to the appropriate category of property, plant and equipment when completed and ready for use.

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.11 Investment properties

Investment properties are interests in land and buildings (including the leasehold property held as a right-of-use asset (2018: leasehold property under an operating lease) which would otherwise meet the definition of an investment property) held to earn rental income and/or for capital appreciation, rather than for use in the production or supply of goods or services or for administrative purposes; or for sale in the ordinary course of business. Such properties are measured initially at cost, including transaction costs. After initial recognition, the Group uses the cost methods to measure all of its investment properties.

Depreciation is calculated on the straight-line basis to write off the cost to investment property's residual value over its estimated useful life. The estimated useful lives are as follows:

Buildings	50 years
Land use rights	40–70 years

The carrying amounts of investment properties measured using the cost method are reviewed for impairment when events or changes in circumstances indicate that the carrying amounts may not be recoverable.

Any gains or losses on the retirement or disposal of an investment property are recognized in profit or loss in the year of the retirement or disposal.

2.12 Non-current assets and disposal groups held for sale

Non-current assets and disposal groups are classified as held for sale if their carrying amounts will be recovered principally through a sales transaction rather than through continuing use. For this to be the case, the asset or disposal group must be available for immediate sale in its present condition subject only to terms that are usual and customary for the sale of such assets or disposal groups and its sale must be highly probable. All assets and liabilities of a subsidiary classified as a disposal group are reclassified as held for sale regardless of whether the Group retains a non-controlling interest in its former subsidiary after the sale.

Non-current assets and disposal groups (other than financial assets) classified as held for sale are measured at the lower of their carrying amounts and fair values less costs to sell. Property, plant and equipment and intangible assets classified as held for sale are not depreciated or amortized.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.13 Intangible assets (other than goodwill)

Intangible assets acquired separately are measured on initial recognition at cost. The cost of intangible assets acquired in a business combination is the fair value at the date of acquisition. The useful lives of intangible assets are assessed to be either finite or indefinite. Intangible assets with finite lives are subsequently amortized over the useful economic life and assessed for impairment whenever there is an indication that the intangible asset may be impaired. The amortization period and the amortization method for an intangible asset with a finite useful life are reviewed at least at each financial year end.

(a) Mining rights and mineral exploration rights

The Group's mineral exploration rights and mining rights relate to coal, bauxite and other mines.

(i) Recognition

Except for mineral exploration rights and mining rights acquired in a business combination, mineral exploration rights and mining rights are initially recorded at cost which includes the acquisition consideration, qualifying exploration and other direct costs. The mineral exploration rights are stated at cost less any impairment, and the mining rights are stated at cost less any amortization and impairment.

(ii) Reclassification

Mineral exploration rights are converted to mining rights when technical feasibility and commercial viability of extracting a mineral resource are demonstrable, and are subject to amortization when commercial production has commenced.

The Group assesses the stage of each mine under construction to determine when a mine moves into the production stage. The criteria used to assess the start date are determined based on the unique nature of each mine construction project. The Group considers various relevant criteria, such as completion of a reasonable period of testing of the mine and equipment, ability to produce in saleable form (within specifications) and ability to sustain ongoing production to assess when a mine is substantially complete and ready for its intended use.

(iii) Amortization

Amortization of bauxite and other mining rights (except for coal mining rights) is provided on a straight-line basis according to the shorter of the expiration date of the mining certificate and the mineable period of natural resources. Estimated mineable periods of the majority of the mining rights range from 3 to 30 years.

Coal mining rights are amortized on a unit-of-production basis over the economically recoverable reserves evaluated based on the reserves estimated in accordance with the standards in the Solid Mineral Resource/Reserve Classification of the PRC (GB/T17766-1999) of the mine concerned.

(iv) Impairment

An impairment review is performed when there are indicators that the carrying amount of the mineral exploration rights and mining rights may exceed their recoverable amounts. To the extent that this occurs, the excess is fully provided as an impairment loss.

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.13 Intangible assets (other than goodwill) (Continued)

(b) Computer software

Acquired computer software licences are capitalized on the basis of the costs incurred to acquire and bring to use specific software. These costs are amortized over their estimated useful lives, which do not exceed 10 years. Costs associated with maintaining computer software programmes are recognized as an expense as incurred.

(c) Electrolytic aluminum production quota

Electrolytic aluminum production quota are initially recorded at cost and subsequently states at cost less any amortization and impairment. Amortization is provided on a straight-line basis according to expected production period.

(d) Other intangible assets

Other intangible assets mainly include profit-sharing rights of Maochang mine, which are initially recorded at costs incurred to acquire the specific right. Amortization is calculated on the straight-line basis over its estimated useful life. The estimated useful live of profit-sharing rights of Maochang mine is 22.5 years.

For intangible assets with finite useful life, the estimated useful lives and amortization method are reviewed annually at the end of each reporting period and adjusted when necessary.

2.14 Research and development costs

Research and development expenditures are classified as research expenditures and development expenditures according to the nature of the expenditures and whether there is significant uncertainty of development activities transforming to assets.

Research expenditures are recognized in profit or loss for the current period. Development expenditures are recognized as assets when all of the following criteria are met:

- (i) it is technically feasible to complete the asset so that it will be available for use or sale;
- (ii) management intends to complete the asset and intends and has ability to use or sell it;
- (iii) it can be demonstrated that the asset will generate probable future economic benefits;
- (iv) there are adequate technical, financial and other resources to complete the development of the asset and management has the ability to use or sell the asset; and
- (v) the expenditure attributable to the asset during its development phase can be reliably measured.

Development expenditures that do not meet the criteria above are recorded in profit or loss for the current period as incurred. Development expenditures that have been recorded in profit or loss in previous periods will be not recognized as assets in subsequent periods. The Group has not had any development expenditure capitalized.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.15 Leases (applicable from January 1, 2019)

The Group assesses at contract inception whether a contract is, or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

Group as a lessee

The Group applies a single recognition and measurement approach for all leases, except for short-term leases and leases of low-value assets. The Group recognizes lease liabilities to make lease payments and right-of-use assets representing the right to use the underlying assets.

(a) Right-of-use assets

Right-of-use assets are recognized at the commencement date of the lease (that is the date the underlying asset is available for use). Right-of-use assets are measured at cost, less any accumulated depreciation and any impairment losses, and adjusted for any remeasurement of lease liabilities. The cost of right-of-use assets includes the amount of lease liabilities recognized, initial direct costs incurred, and lease payment made at or before the commencement date less any lease incentives received. Right-of-use assets are depreciated on a straight-line basis over the shorter of the lease terms and the estimated useful lives of the assets as follows:

Buildings	2–20 years
Machinery	2–10 years
Land use rights	10–50 years

If ownership of the leased asset transfers to the Group by the end of the lease term or the cost reflects the exercise of a purchase option, depreciation is calculated using the estimated useful life of the asset.

(b) Lease liabilities

Lease liabilities are recognized at the commencement date of the lease at the present value of lease payments to be made over the lease term. The lease payments include fixed payments (including in-substance fixed payments) less any lease incentives receivable, variable lease payments that depend on an index or a rate, and amounts expected to be paid under residual value guarantees. The lease payments also include the exercise price of a purchase option reasonably certain to be exercised by the Group and payments of penalties for termination of a lease, if the lease term reflects the Group exercising the option to terminate. The variable lease payments that do not depend on an index or a rate are recognized as an expense in the period in which the event or condition that triggers the payment occurs.

In calculating the present value of lease payments, the Group uses its incremental borrowing rate at the lease commencement date because the interest rate implicit in the lease is not readily determinable. After the commencement date, the amount of lease liabilities is increased to reflect the accretion of interest and reduced for the lease payments made. In addition, the carrying amount of lease liabilities is remeasured if there is a modification, a change in the lease term, a change in lease payments (e.g., a change to future lease payments resulting from a change in an index or rate) or a change in assessment of an option to purchase the underlying asset.

The Group's lease liabilities are included in interest-bearing bank and other borrowings.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.15 Leases (applicable from January 1, 2019) (Continued)

Group as a lessee (Continued)

(c) Short-term leases and leases of low-value assets

The Group applies the short-term lease recognition exemption to its short-term leases of machinery and equipment (that is those leases that have a lease term of 12 months or less from the commencement date and do not contain a purchase option). It also applies the recognition exemption for leases of low-value assets to leases of office equipment that are considered to be of low value (i.e. below RMB30,000).

Lease payments on short-term leases and leases of low-value assets are recognized as an expense on a straight-line basis over the lease term.

Group as a lessor

When the Group acts as a lessor, it classifies at lease inception (or when there is a lease modification) each of its leases as either an operating lease or a finance lease.

Leases in which the Group does not transfer substantially all the risks and rewards incidental to ownership of an asset are classified as operating leases. When a contract contains lease and non-lease components, the Group allocates the consideration in the contract to each component on a relative stand-alone selling price basis. Rental income is accounted for on a straight-line basis over the lease terms and is included in revenue in profit or loss due to its operating nature. Initial direct costs incurred in negotiating and arranging an operating lease are added to the carrying amount of the leased asset and recognized over the lease term on the same basis as rental income. Contingent rents are recognized as revenue in the period in which they are earned.

Leases that transfer substantially all the risks and rewards incidental to ownership of an underlying assets to the lessee, are accounted for as finance leases. At the commencement date, the cost of the leased asset is capitalized at the present value of the minimum lease payments and related payments (including the initial direct costs), and presented as a receivable at an amount equal to the net investment in the lease. The finance costs of such leases are charged to profit or loss so as to provide a constant periodic rate of charge over the lease terms.

2.16 Leases (applicable before January 1, 2019)

Leases that transfer substantially all the rewards and risks of ownership of assets to the Group, other than legal title, are accounted for as finance leases. At the inception of a finance lease, the cost of the leased asset is capitalized at the present value of the minimum lease payments and recorded together with the obligation, excluding the interest element, to reflect the purchase and financing. Assets held under capitalized finance leases, including prepaid land lease payments under finance leases, are included in property, plant and equipment, and depreciated over the shorter of the lease terms and the estimated useful lives of the assets. The finance costs of such leases are charged to profit or loss so as to provide a constant periodic rate of charge over the lease terms.

Assets acquired through hire purchase contracts of a financing nature are accounted for as finance leases, but are depreciated over their estimated useful lives.

ALUMINUM CORPORATION OF CHINA LIMITED
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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.16 Leases (applicable before January 1, 2019) (Continued)

Leases where substantially all the rewards and risks of ownership of assets remain with the lessor are accounted for as operating leases. Where the Group is the lessor, assets leased by the Group under operating leases are included in non-current assets, and rentals receivable under the operating leases are credited to profit or loss on the straight-line basis over the lease terms. Where the Group is the lessee, rentals payable under operating leases net of any incentives received from the lessor are charged to profit or loss on the straight-line basis over the lease terms.

Prepaid land lease payments under operating leases are initially stated at cost and subsequently recognized on the straight-line basis over the lease terms.

2.17 Investments and other financial assets

IFRS 9 Financial Instruments replaced IAS 39 Financial Instruments: Recognition and Measurement for annual periods beginning on or after January 1, 2018, bringing together all three aspects of the accounting for financial instruments: classification and measurement, impairment and hedge accounting. The Group has recognized the transition adjustments against the applicable opening balances in equity at January 1, 2018. Therefore, the comparative information was not restated and continues to be reported under IAS 39.

Initial recognition and measurement

Financial assets are classified, at initial recognition, as subsequently measured at amortized cost, fair value through other comprehensive income, and fair value through profit or loss.

The classification of financial assets at initial recognition depends on the financial asset's contractual cash flow characteristics and the Group's business model for managing them. With the exception of trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient of not adjusting the effect of a significant financing component, the Group initially measures a financial asset at its fair value, plus in the case of a financial asset not at fair value through profit or loss, transaction costs. Trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient are measured at the transaction price determined under IFRS 15 in accordance with the policies set out for "Revenue recognition" below.

In order for a financial asset to be classified and measured at amortized cost or fair value through other comprehensive income, it needs to give rise to cash flows that are solely payments of principal and interest ("SPPI") on the principal amount outstanding. Financial assets with cash flows that are not SPPI are classified and measured at fair value through profit or loss, irrespective of the business model.

The Group's business model for managing financial assets refers to how it manages its financial assets in order to generate cash flows. The business model determines whether cash flows will result from collecting contractual cash flows, selling the financial assets, or both. Financial assets classified and measured at amortized cost are held within a business model with the objective to hold financial assets in order to collect contractual cash flows, while financial assets classified and measured at fair value through other comprehensive income are held within a business model with the objective of both holding to collect contractual cash flows and selling. Financial assets which are not held within the aforementioned business models are classified and measured at fair value through profit or loss.

All regular way purchases and sales of financial assets are recognized on the trade date, that is, the date that the Group commits to purchase or sell the asset. Regular way purchases or sales are purchases or sales of financial assets that require delivery of assets within the period generally established by regulation or convention in the marketplace.

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.17 Investments and other financial assets (Continued)

Subsequent measurement

The subsequent measurement of financial assets depends on their classification as follows:

Financial assets at amortized cost (debt instruments)

Financial assets at amortized cost are subsequently measured using the effective interest method and are subject to impairment. Gains and losses are recognized in profit or loss when the asset is derecognized, modified or impaired.

Financial assets at fair value through other comprehensive income (debt instruments)

For debt investments at fair value through other comprehensive income, interest income, foreign exchange revaluation and impairment losses or reversals are recognized in profit or loss and computed in the same manner as for financial assets measured at amortized cost. The remaining fair value changes are recognized in other comprehensive income. Upon derecognition, the cumulative fair value change recognized in other comprehensive income is recycled to profit or loss.

Financial assets designated at fair value through other comprehensive income (equity investments)

Upon initial recognition, the Group can elect to classify irrevocably its equity investments as equity investments designated at fair value through other comprehensive income when they meet the definition of equity under IAS 32 Financial Instruments: Presentation and are not held for trading. The classification is determined on an instrument-by-instrument basis.

Gains and losses on these financial assets are never recycled to profit or loss. Dividends are recognized as other income in profit or loss when the right of payment has been established, it is probable that the economic benefits associated with the dividend will flow to the Group and the amount of the dividend can be measured reliably, except when the Group benefits from such proceeds as a recovery of part of the cost of the financial asset, in which case, such gains are recorded in other comprehensive income. Equity investments designated at fair value through other comprehensive income are not subject to impairment assessment.

Financial assets at fair value through profit or loss

Financial assets at fair value through profit or loss are carried in the statement of financial position at fair value with net changes in fair value recognized in profit or loss.

This category includes derivative instruments, wealth management products and equity investments which the Group had not irrevocably elected to classify at fair value through other comprehensive income. Dividends on equity investments classified as financial assets at fair value through profit or loss are also recognized as other gains in profit or loss when the right of payment has been established, it is probable that the economic benefits associated with the dividend will flow to the Group and the amount of the dividend can be measured reliably.

A derivative embedded in a hybrid contract, with a financial liability or non-financial host, is separated from the host and accounted for as a separate derivative if the economic characteristics and risks are not closely related to the host; a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative; and the hybrid contract is not measured at fair value through profit or loss. Embedded derivatives are measured at fair value with changes in fair value recognized in profit or loss. Reassessment only occurs if there is either a change in the terms of the contract that significantly modifies the cash flows that would otherwise be required or a reclassification of a financial asset out of the fair value through profit or loss category.

ALUMINUM CORPORATION OF CHINA LIMITED
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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.17 Investments and other financial assets (Continued)

Subsequent measurement (Continued)

Financial assets at fair value through profit or loss (Continued)

A derivative embedded within a hybrid contract containing a financial asset host is not accounted for separately. The financial asset host together with the embedded derivative is required to be classified in its entirety as a financial asset at fair value through profit or loss.

Derecognition of financial assets

A financial asset (or, where applicable, a part of a financial asset or part of a group of similar financial assets) is primarily derecognized (i.e., removed from the Group's consolidated statement of financial position) when:

- the rights to receive cash flows from the asset have expired; or
- the Group has transferred its rights to receive cash flows from the asset or has assumed an obligation to pay the received cash flows in full without material delay to a third party under a "pass-through" arrangement; and either (a) the Group has transferred substantially all the risks and rewards of the asset, or (b) the Group has neither transferred nor retained substantially all the risks and rewards of the asset, but has transferred control of the asset.

When the Group has transferred its rights to receive cash flows from an asset or has entered into a pass-through arrangement, it evaluates if, and to what extent, it has retained the risk and rewards of ownership of the asset. When it has neither transferred nor retained substantially all the risks and rewards of the asset nor transferred control of the asset, the Group continues to recognize the transferred asset to the extent of the Group's continuing involvement. In that case, the Group also recognizes an associated liability. The transferred asset and the associated liability are measured on a basis that reflects the rights and obligations that the Group has retained.

Continuing involvement that takes the form of a guarantee over the transferred asset is measured at the lower of the original carrying amount of the asset and the maximum amount of consideration that the Group could be required to repay.

Impairment of financial assets

The Group recognizes an allowance for expected credit losses ("ECLs") for all debt instruments not held at fair value through profit or loss. ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate. The ECL at December 31, 2019 was estimated based on a range of forecast economic conditions as at that date. Since early January 2020, the coronavirus outbreak has spread across mainland China and beyond, causing disruption to business and economic activity. The impact on GDP and other key indicators have been considered when determining the severity and likelihood of downside economic scenarios that are used to estimate ECL under IFRS 9 in 2020.

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.17 Investments and other financial assets (Continued)

Impairment of financial assets (Continued)

General approach

ECLs are recognized in two stages. For credit exposures for which there has not been a significant increase in credit risk since initial recognition, ECLs are provided for credit losses that result from default events that are possible within the next 12 months (a 12-month ECL). For those credit exposures for which there has been a significant increase in credit risk since initial recognition, a loss allowance is required for credit losses expected over the remaining life of the exposure, irrespective of the timing of the default (a lifetime ECL).

At each reporting date, the Group assesses whether the credit risk on a financial instrument has increased significantly since initial recognition. When making the assessment, the Group compares the risk of a default occurring on the financial instrument as at the reporting date with the risk of a default occurring on the financial instrument as at the date of initial recognition and considers reasonable and supportable information that is available without undue cost or effort, including historical and forward-looking information.

The Group considers a financial asset to be in default when internal or external information indicates that the Group is unlikely to receive the outstanding contractual amounts in full before taking into account any credit enhancements held by the Group. A financial asset is written off when there is no reasonable expectation of recovering the contractual cash flows.

Debt investments at fair value through other comprehensive income and financial assets at amortized cost are subject to impairment under the general approach and they are classified within the following stages for measurement of ECLs except for trade receivables and contract assets which apply the simplified approach as detailed below.

Stage 1 – Financial instruments for which credit risk has not increased significantly since initial recognition and for which the loss allowance is measured at an amount equal to 12-month ECLs

Stage 2 – Financial instruments for which credit risk has increased significantly since initial recognition but that are not credit-impaired financial assets and for which the loss allowance is measured at an amount equal to lifetime ECLs

Stage 3 – Financial assets that are credit-impaired at the reporting date (but that are not purchased or originated credit-impaired) and for which the loss allowance is measured at an amount equal to lifetime ECLs

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.17 Investments and other financial assets (Continued)

Impairment of financial assets (Continued)

Simplified approach

For trade receivables and contract assets that do not contain a significant financing component or when the Group applies the practical expedient of not adjusting the effect of a significant financing component, the Group applies the simplified approach in calculating ECLs. Under the simplified approach, the Group does not track changes in credit risk, but instead recognizes a loss allowance based on lifetime ECLs at each reporting date. The Group has established a provision matrix that is based on its historical credit loss experience, adjusted for forward-looking factors specific to the debtors and the economic environment.

For trade receivables and contract assets that contain a significant financial component and lease receivables, the Group chooses as its accounting policy to adopt the simplified approach in calculating ECLs with policies as described above.

2.18 Financial liabilities

Initial recognition and measurement

Financial liabilities are classified, at initial recognition, as financial liabilities at fair value through profit or loss, loans and borrowings, payables, or as derivatives designated as hedging instruments in an effective hedge, as appropriate.

All financial liabilities are recognized initially at fair value and, in the case of loans and borrowings and payables, net of directly attributable transaction costs.

The Group's financial liabilities include trade and other payables, derivative financial instruments and interest-bearing bank and other borrowings.

Subsequent measurement

The subsequent measurement of financial liabilities depends on their classification as follows:

Financial liabilities at fair value through profit or loss

Financial liabilities at fair value through profit or loss include financial liabilities held for trading and financial liabilities designated upon initial recognition as at fair value through profit or loss.

Financial liabilities are classified as held for trading if they are incurred for the purpose of repurchasing in the near term. This category also includes derivative financial instruments entered into by the Group that are not designated as hedging instruments in hedge relationships as defined by IFRS 9. Separated embedded derivatives are also classified as held for trading unless they are designated as effective hedging instruments. Gains or losses on liabilities held for trading are recognized in profit or loss. The net fair value gain or loss recognized in profit or loss does not include any interest charged on these financial liabilities.

ALUMINUM CORPORATION OF CHINA LIMITED
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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.18 Financial liabilities (Continued)

Subsequent measurement (Continued)

Financial liabilities at amortized cost (loans and borrowings)

After initial recognition, interest-bearing loans and borrowings are subsequently measured at amortized cost, using the effective interest rate method unless the effect of discounting would be immaterial, in which case they are stated at cost. Gains and losses are recognized in profit or loss when the liabilities are derecognized as well as through the effective interest rate amortization process.

Amortized cost is calculated by taking into account any discount or premium on acquisition and fees or costs that are an integral part of the effective interest rate. The effective interest rate amortization is included in finance costs in profit or loss.

Financial guarantee contracts

Financial guarantee contracts issued by the Group are those contracts that require a payment to be made to reimburse the holder for a loss it incurs because the specified debtor fails to make a payment when due in accordance with the terms of a debt instrument. A financial guarantee contract is recognized initially as a liability at its fair value, adjusted for transaction costs that are directly attributable to the issuance of the guarantee. Subsequent to initial recognition, the Group measures the financial guarantee contracts at the higher of: (i) the ECL allowance determined in accordance with the policy as set out in "Impairment of financial assets"; and (ii) the amount initially recognized less, when appropriate, the cumulative amount of income recognized.

Derecognition of financial liabilities

A financial liability is derecognized when the obligation under the liability is discharged or cancelled, or expires. When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability are substantially modified, such an exchange or modification is treated as a derecognition of the original liability and a recognition of a new liability, and the difference between the respective carrying amounts is recognized in profit or loss.

2.19 Offsetting financial instruments

Financial assets and liabilities are offset and the net amount reported in the consolidated statement of financial position when there is a legally enforceable right to offset the recognized amounts and there is an intention to settle on a net basis or realize the asset and settle the liability simultaneously.

2.20 Derivative financial instruments

Initial recognition and subsequent measurement

The Group uses derivative financial instruments, such as futures and option contracts, to reduce its exposure to fluctuation in the price of primary aluminium and other products, to hedge its foreign currency risk and interest rate risk, respectively. Such derivative financial instruments are initially recognized at fair value on the date on which a derivative contract is entered into and are subsequently remeasured at fair value. Derivatives are carried as assets when the fair value is positive and as liabilities when the fair value is negative.

Any gains or losses arising from changes in fair value of derivatives are taken directly to profit or loss.

ALUMINUM CORPORATION OF CHINA LIMITED
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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.21 Inventories

Inventories comprise raw materials, work-in-progress, finished goods, spare parts and packaging materials and others, and are stated at the lower of cost and net realizable amount. Cost is determined using the weighted average method. Work-in-progress and finished goods comprise materials, direct labour and an appropriate proportion of all production overhead expenditure (based on the normal operating capacity). Borrowing costs are excluded.

Provision for impairment of inventories is usually determined by the excess of cost over the net realizable amount and recorded in profit or loss. Net realizable amounts are determined based on the estimated selling price less estimated conversion costs, selling expenses and related taxes in the ordinary course of business. The provision for or the reversal of provision for impairment of inventories is recognized within "Cost of sales" in profit or loss.

2.22 Cash and cash equivalents

For the purpose of the consolidated statement of cash flows, cash and cash equivalents comprise cash on hand and demand deposits, and short term highly liquid investments that are readily convertible into known amounts of cash, are subject to an insignificant risk of changes in value, and have a short maturity of generally within three months when acquired, less bank overdrafts which are repayable on demand and form an integral part of the Group's cash management.

For the purpose of the consolidated statement of financial position, cash and cash equivalents comprise cash on hand and at banks, including term deposits, and assets similar in nature to cash, which are not restricted as to use.

2.23 Provisions

A provision is recognized when a present obligation (legal or constructive) has arisen as a result of a past event and it is probable that a future outflow of resources will be required to settle the obligation, provided that a reliable estimate can be made of the amount of the obligation.

When the effect of discounting is material, the amount recognized for a provision is the present value at the end of the reporting period of the future expenditures expected to be required to settle the obligation. The increase in the discounted present value amount arising from the passage of time is included in finance costs in profit or loss.

ALUMINUM CORPORATION OF CHINA LIMITED
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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.24 Government grants

In 2018, the management of the Group performed an analysis on the nature of the Group's government grants. After reassessing the gross vs. net presentation policy, management considered that presenting government grants in the net method can provide reliable and more relevant information about the effects of transactions to the users of the financial statements. As such, the Company proposed a voluntary change in the accounting policy.

Up to the year of 2017, the Group recognized and measured government grants according to the gross method: Asset-related government grants are recognized when the government document designates that the government grants are used for constructing or forming long-term assets. Asset-related government grants are recognized as deferred income and are amortized evenly in profit or loss over the useful lives of the related assets. Income-related government grants that are used to compensate subsequent related expenses or losses of the Group are recognized as deferred income and recorded in profit or loss when the related expenses or losses are incurred. When the grants are used to compensate expenses or losses that were already incurred, they are directly recognized in profit or loss for the current period.

After the voluntary change in the accounting policy, the Group recognized government grants according to the net method. For asset related government grants, had the asset already existed upon receiving the government grant, the Group directly deducted the grant amount from the book value of the assets related to the government grant instead of recording the government grants as deferred income. For government grants related to income and expenses already incurred by the Group, which are specific to compensate certain cost and expenses, the Group would directly offset the grant amount against the related cost or expense.

Government grants are recognized at their fair value where there is reasonable assurance that the grant will be received and all attaching conditions will be complied with. When the grant relates to an expense item, it is recognized as income on a systematic basis over the periods that the costs, which it is intended to compensate, are expensed.

Asset-related government grants are recognized when the government document designates that the government grants are used for constructing or forming long-term assets. If the government document is inexplicit, the Group should make a judgement based on the basic conditions to obtain the government grants, and recognizes them as asset-related government grants if the conditions are to construct or to form long-term assets. Otherwise, the government grants should be income-related.

For asset-related government grants that is related to long lived assets that already exist at the time of recognising the government grant, the grant is deducted in calculating the carrying amount of the asset. The grant is recognized in profit or loss over the life of a depreciable asset as a reduced depreciation expense. If the asset is not yet purchased or constructed at the time of recognising the government grant, the grant is recognized as deferred income and will be deducted from the cost of the asset once the asset is recognized.

Income-related government grants that are specific to compensate expenses or costs that have already incurred, they are directly recognized in profit or loss for the current period as deduction of the related expenses or costs. If the income-related government grants are specific to compensate future expenses or costs of the Group, they are recognized as deferred income and will be released to profit or loss when the related expenses or costs are incurred.

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.25 Employee benefits

Employee benefits mainly include salaries, bonuses, allowances and subsidies, pension insurance, social insurance and housing funds, labour union fees, employees' education fees and other expenses related to the employees for their services. The Group recognizes employee benefits as liabilities during the accounting period when employees rendered the services and allocates the related cost of assets and expenses based on different beneficiaries.

(a) Bonus plans

The expected cost of bonus plans is recognized as a liability when the Group has a present legal or constructive obligation as a result of services rendered by employees and a reliable estimate of the obligation can be made.

(b) Retirement benefit obligations

The Group primarily pays contributions on a monthly basis to participate in a pension plan organized by the relevant municipal and provincial governments in the PRC. In 2019, the Group made monthly contributions at the rate of 17% (2018: 20%) of the qualified employees' salaries. The municipal and provincial governments undertake to assume the retirement benefit obligations of all existing and future retired employees payable under these plans. The Group has no legal or constructive obligations for further contributions if the fund does not hold sufficient assets to pay all employees the benefit relating to their current and past services.

(c) Other social insurance and housing funds

The Group provides other social insurance and housing funds to the qualified employees in the PRC based on certain percentages of their salaries. These percentages are not to exceed the upper limits of the percentages prescribed by the Ministry of Human Resources and Social Security of the PRC. These benefits are paid to social security organisations and the amounts are expensed as incurred. The Group has no legal or constructive obligations for further contributions if the fund does not hold sufficient assets to pay all employees the benefit relating to their current and past services.

(d) Termination benefit obligations and early retirement benefit obligations

Termination and early retirement benefit obligations are payable when employment is terminated by the Group before the normal retirement date, or whenever an employee accepts voluntary redundancy and/or early retirement in exchange for these benefits. The Group recognizes termination and early retirement benefit obligations when it is demonstrably committed to either: terminating the employment of current employees according to a detailed formal plan without possibility of withdrawal; or providing termination benefits as a result of an offer made to encourage voluntary redundancy and/or early retirement. The specific terms vary among the terminated and early retired employees depending on various factors including position, length of service and district of the employees concerned. Benefits falling due for more than 12 months after the end of the reporting period are discounted to their present values.

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.26 Income tax

Income tax comprises current and deferred tax. Income tax relating to items recognized outside profit or loss is recognized outside profit or loss, either in other comprehensive income or directly in equity.

Current tax assets and liabilities are measured at the amount expected to be recovered from or paid to the taxation authorities, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period, taking into consideration interpretations and practices prevailing in the countries in which the Group operates.

Deferred tax is provided, using the liability method, on all temporary differences at the end of the reporting period between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes.

Deferred tax liabilities are recognized for all taxable temporary differences, except:

- when the deferred tax liability arises from the initial recognition of goodwill or an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss; and
- in respect of taxable temporary differences associated with investments in subsidiaries, associates and joint ventures, when the timing of the reversal of the temporary differences can be controlled and it is probable that the temporary differences will not reverse in the foreseeable future.

Deferred tax assets are recognized for all deductible temporary differences, the carry forward of unused tax credits and any unused tax losses. Deferred tax assets are recognized to the extent that it is probable that taxable profit will be available against which the deductible temporary differences, the carry forward of unused tax credits and unused tax losses can be utilized, except:

- when the deferred tax asset relating to the deductible temporary differences arises from the initial recognition of an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss; and
- in respect of deductible temporary differences associated with investments in subsidiaries, associates and joint ventures, deferred tax assets are only recognized to the extent that it is probable that the temporary differences will reverse in the foreseeable future and taxable profit will be available against which the temporary differences can be utilized.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.26 Income tax(Continued)

The carrying amount of deferred tax assets is reviewed at the end of each reporting period and reduced to the extent that it is no longer probable that sufficient taxable profit will be available to allow all or part of the deferred tax asset to be utilized. Unrecognized deferred tax assets are reassessed at the end of each reporting period and are recognized to the extent that it has become probable that sufficient taxable profit will be available to allow all or part of the deferred tax asset to be recovered.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply to the period when the asset is realized or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period.

Deferred tax assets and deferred tax liabilities are offset if and only if the Group has a legally enforceable right to set off current tax assets and current tax liabilities and the deferred tax assets and deferred tax liabilities relate to income taxes levied by the same taxation authority on either the same taxable entity or different taxable entities which intend either to settle current tax liabilities and assets on a net basis, or to realize the assets and settle the liabilities simultaneously, in each future period in which significant amounts of deferred tax liabilities or assets are expected to be settled or recovered.

2.27 Perpetual securities

Perpetual securities are classified as equity if they are non-redeemable, or redeemable only at the issuer's option, and any interest and distributions are discretionary. Interest and distributions on perpetual securities classified as equity are recognized as distributions within equity.

The perpetual securities issued by the Company are recognized as other equity instruments, and the perpetual securities issued by a subsidiary of the Company are recognized as non-controlling interests.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.28 Revenue recognition

Revenue from contracts with customers

The Group adopted IFRS 15 from January 1, 2018 using the modified retrospective method of adoption. The Group applied IFRS 15 to contracts that are initiated after the effective date and contracts that had remaining obligations as of the effective date. In respect of the prior periods, the Group retained prior period's figures as reported under the previous standards, recognising the cumulative effect of applying IFRS 15 as an adjustment to the opening balance of equity as at January 1, 2018. The Group concluded that the transitional adjustment to be made on January 1, 2018 to accumulated losses upon initial adoption of IFRS 15 is nil. It is because the Group recognizes revenue upon the transfer of significant risks and rewards, which coincides with the fulfilment of performance obligations. Additionally, the Group's contracts with customers generally has only one performance obligation.

Revenue from contracts with customers is recognized when control of goods or services is transferred to the customers at an amount that reflects the consideration to which the Group expects to be entitled in exchange for those goods or services.

When the consideration in a contract includes a variable amount, the amount of consideration is estimated to which the Group will be entitled in exchange for transferring the goods or services to the customer. The variable consideration is estimated at contract inception and constrained until it is highly probable that a significant revenue reversal in the amount of cumulative revenue recognized will not occur when the associated uncertainty with the variable consideration is subsequently resolved.

When the contract contains a financing component which provides the customer with a significant benefit of financing the transfer of goods or services to the customer for more than one year, revenue is measured at the present value of the amount receivable, discounted using the discount rate that would be reflected in a separate financing transaction between the Group and the customer at contract inception. When the contract contains a financing component which provides the Group a significant financial benefit for more than one year, revenue recognized under the contract includes the interest expense accreted on the contract liability under the effective interest method. For a contract where the period between the payment by the customer and the transfer of the promised goods or services is one year or less, the transaction price is not adjusted for the effects of a significant financing component, using the practical expedient in IFRS 15.

(a) Sale of industrial products

Revenue from the sale of industrial products (including sales of scrap and other materials) is recognized at the point in time when control of the asset is transferred to the customer, generally on delivery of the industrial products.

(b) Rendering of services

Revenue from services is recognized over time, using an input method to measure progress towards complete satisfaction of the service, because the customer simultaneously receives and consumes the benefits provided by the Group. Revenue is recognized on a straight-line basis because the entity's inputs are expended evenly throughout the performance period.

Revenue from other sources

(a) Rental income

Rental income is recognized on a time proportion basis over the lease terms. Variable lease payments that do not depend on an index or a rate are recognized as income in the accounting period in which they are incurred.

(b) Other income

Interest income is recognized on an accrual basis using the effective interest method by applying the rate that exactly discounts the estimated future cash receipts over the expected life of the financial instrument or a shorter period, when appropriate, to the net carrying amount of the financial asset.

Dividend income is recognized when the shareholders' right to receive payment has been established, it is probable that the economic benefits associated with the dividend will flow to the Group and the amount of the dividend can be measured reliably.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

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2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2.29 Contract liabilities

A contract liability is recognized when a payment is received or a payment is due (whichever is earlier) from a custom before the Group transfers the related goods or services. Contract liabilities are recognized as revenue when the Group performs under the contract (i.e., transfers control of the related goods or services to the customer) .

2.30 Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of qualifying assets, i.e., assets that necessarily take a substantial period of time to get ready for their intended use or sale, are capitalized as part of the cost of those assets. The capitalisation of such borrowing costs ceases when the assets are substantially ready for their intended use or sale. Investment income earned on the temporary investment of specific borrowings pending their expenditure on qualifying assets is deducted from the borrowing costs capitalized. All other borrowing costs are expensed in the period in which they are incurred. Borrowing costs consist of interest and other costs that an entity incurs in connection with the borrowing of funds.

2.31 Dividend distribution

Dividend distribution to the Company's shareholders is recognized as a liability in the Group's and Company's financial statements in the period in which the dividends are approved by the Company's shareholders in a general meeting.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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3. SIGNIFICANT ACCOUNTING ESTIMATES AND JUDGEMENTS

The preparation of the Group's consolidated financial statements requires management to make judgements, estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the accompanying disclosures, and the disclosure of contingent liabilities. Uncertainty about these judgements, assumptions and estimates could result in outcomes that require a material adjustment to the carrying amounts of assets or liabilities affected in future periods.

Judgements

In the process of applying the Group's accounting policies and preparing the Group's consolidated financial statements, management has made the following judgements, apart from those involving estimates, which have a significant effect on the amounts recognized in the consolidated financial statements.

(a) Significant influence over an entity in which the Group holds less than 20% of voting rights

As disclosed in Note 8, the Group owned a 10.04% equity interest in Yunnan Aluminium Co., Ltd.* ("Yunnan Aluminum") (雲南鋁業股份有限公司). The Group considers that it has significant influence over Yunnan Aluminum even though it owns less than 20% of the voting rights, on the grounds that the Group is the second largest shareholders of Yunnan Aluminum and one out of the eleven directors of the board of directors of Yunnan Aluminum exercises director's rights on behalf of the Group.

At December 31, 2019, the Group owned a 6.68% equity interest in Chalco Mineral Resources Co., Ltd.* ("Chalco Resources") (中鋁礦產資源有限公司). The Group considers that it has significant influence over Chalco Resources even though it owns less than 20% of the voting rights, on the grounds that the Group can appoint one out of the five directors of the board of directors of Chalco Resources.

At December 31, 2019, the Group owned 14.71% of the voting right of Chinalco Capital Holdings Co., Ltd.* ("Chinalco Capital") (中鋁資本控股有限公司). The Group considers that it has significant influence over Chinalco Capital since it can appoint one out of three directors of the board of directors of Chinalco Capital.

At December 31, 2019, the Group owned a 16% equity interest in Baise New Aluminum Power Co., Ltd. * ("New Aluminum Power") (百色新鋁電力有限公司). The Group considers that the Group has significant influence over New Aluminum Power even though it owns less than 20% of the voting rights, on the grounds that the Group can appoint one out of the nine directors of the board of directors of New Aluminum Power.

At December 31, 2019, the Group owned a 14.29% equity interest in Inner Mongolia Geliugou Co., Ltd.* ("Inner Mongolia Qiliugou") (內蒙古圪柳溝能源有限公司). The Group considers that it has significant influence over Inner Mongolia Qiliugou even though it owns less than 20% of the voting rights, on the grounds that the Group can appoint one out of the seven directors of the board of directors of Inner Mongolia Qiliugou.

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For the years ended December 31, 2017, 2018 and 2019

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3. SIGNIFICANT ACCOUNTING ESTIMATES AND JUDGEMENTS (CONTINUED)

Judgements (Continued)

(b) Consolidation of entities in which the Group holds less than a majority of voting rights

At December 31, 2019, the Group owned a 40.23% equity interest in Ningxia Yinxing Energy Co., Ltd. * (“Yinxing Energy”) (寧夏銀星能源股份有限公司). Since the remaining 59.77% of the equity shares in Yinxing Energy are held by a large number of individual shareholders, in opinion of the directors of the Company, the Group has control over Yinxing Energy, and Yinxing Energy continues to be included in the consolidation scope.

At December 31, 2019, the Company owned a 40% equity interest in Guizhou Huaren New Materials Co., Ltd.* (“Guizhou Huaren”) (貴州華仁新材料有限公司). In accordance with the acting-in-concert agreement signed between the Company and Hangzhou Jinjiang Group Co., Ltd.* (“Hangzhou Jinjiang”) (杭州錦江集團有限公司), Hangzhou Jinjiang would exercise the shareholders’ and board of directors’ votes in concert with the Group. Therefore, the directors of the Company believe that the Company has control over Guizhou Huaren and consolidated Guizhou Huaren’s financial statements from the date the Group obtained control.

At December 31, 2019, the Company owned 43.39% of the shares of Shanxi China Aluminum China Resources Co., Ltd.* (“Shanxi Zhongrun”) (山西中鋁華潤有限公司). In accordance with the acting-in-concert agreement signed between the Company and China Resources Coal Industry Group Co., Ltd. (“China Resources Coal Industry”), China Resources Coal Industry would exercise the shareholders’ and board of directors’ votes in concert with the Group. Therefore, the directors of the Company believe that the Company has control over Shanxi Zhongrun and consolidated Shanxi Zhongrun’s financial statements from the date the Group obtained control.

(c) Determination of control over structured entities

As disclosed in Note 9, in 2017, the Company initiated the establishment of Beijing Chalco Bocom Size Industry Investment Fund Management Partnership (Limited Partnership) * (“Size Industry Investment Fund”) (北京中鋁交銀四則產業投資基金管理合夥企業(有限合夥)). Pursuant to the Investment Agreements, the directors of the Company are of the opinion that as a limited partner, the Company neither had control over or joint control over nor significant influence over Size Industry Investment Fund. Therefore, the Company’s investment in Size Industry Investment Fund was accounted for as equity investment designated at fair value through other comprehensive income.

* *The English name represents the best effort made by management of the Group in translating its Chinese name as it does not have any official English names.*

ALUMINUM CORPORATION OF CHINA LIMITED
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3. SIGNIFICANT ACCOUNTING ESTIMATES AND JUDGEMENTS (CONTINUED)

Estimates and assumptions

The key assumptions concerning the future and other key sources of estimation uncertainty at the reporting date, that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year, are described below. The Group's assumptions and estimates are based on parameters available when the consolidated financial statements were prepared. Existing circumstances and assumptions about future developments, however, may change due to market changes or circumstances arising beyond the control of the Group. Such changes are reflected in the assumptions when they occur.

(a) Property, plant and equipment and intangible assets – recoverable amount (excluding goodwill)

In accordance with the Group's accounting policy, each asset or cash-generating unit is evaluated in every reporting period to determine whether there are any indications of impairment. If any such indication exists, an estimate of the net recoverable amount is performed and an impairment loss is recognized to the extent that the carrying amount exceeds the recoverable amount. The recoverable amount of an asset or cash-generating unit of assets is measured at the higher of fair value less costs of disposal and value in use.

A fair value measurement of a non-financial asset takes into account a market participant's ability to generate economic benefits by using the asset in its highest and best use or by selling it to another market participant that would use the asset in its highest and best use.

Value in use is generally determined as the present value of the estimated future cash flows of those expected to arise from the continued use of the asset in its present form and its eventual disposal. Present values are determined using a risk-adjusted pre-tax discount rate appropriate to the risks inherent in the asset. Future cash flow estimates are based on significant estimates and judgments involved in the projections of the future prices of aluminum and alumina, expected production and sales volumes, production costs, operating expenses, and discount rates applied to these forecasted future cash flows. These estimates and judgments may be affected by unexpected changes in the future market or economic conditions; hence, there is a possibility that changes in circumstances will alter these projections, which may impact on the recoverable amounts of the assets. In such circumstances, some or all of the carrying value of the assets may be impaired and the impairment would be charged against profit or loss.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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3. SIGNIFICANT ACCOUNTING ESTIMATES AND JUDGEMENTS (CONTINUED)

Estimates and assumptions (Continued)

(b) Property, plant and equipment and intangible assets (excluding goodwill) - estimated useful lives and residual values

The Group's management determines the estimated useful lives and residual values (if applicable) and consequently the related depreciation/amortization charges for its property, plant and equipment and intangible assets (excluding goodwill). These estimates are based on the historical experience of the actual useful lives of property, plant and equipment of similar nature and functions, or based on value-in-use calculations or market valuations according to the estimated periods that the Group intends to derive future economic benefits from the use of intangible assets. Management will increase the depreciation/ amortization charge where useful lives are less than previously estimated, and it will write off or write down technically obsolete or non-strategic assets that have been abandoned or sold.

Actual economic lives may differ from estimated useful lives and actual residual values may differ from estimated residual values. Periodic review could result in change in depreciable lives and residual values and therefore change in depreciation/amortization expense in future periods.

(c) Goodwill - recoverable amount

In accordance with the Group's accounting policy, goodwill is allocated to the Group's cash generating units ("CGU") as it represents the lowest level within the Group at which the goodwill is monitored for internal management purposes and is tested for impairment annually or more frequently if events or changes in circumstance indicated that the carrying amount may be impaired, by comparing the recoverable amount of the CGU and the carrying amount of the CGU. The recoverable amount is the higher of value in use and the fair value less costs of disposal. The recoverable amount of the underlying CGUs involved estimates and judgments, including future prices of aluminum and alumina, expected production and sales volumes, production costs, operating expenses, terminal growth rates used to estimate future cash flows and discount rates applied to these forecasted future cash flows of the underlying CGUs. These estimates and judgments may be affected by unexpected changes in future market or economic conditions.

(d) Provision for expected credit losses on trade receivables

The Group uses a provision matrix to calculate ECLs for trade receivables. The provision rates are based on days past due for groupings of various customer segments that have similar loss patterns (i.e., by product type, customer type, and coverage by letters of credit and other forms of credit insurance).

The provision matrix is initially based on the Group's historical observed default rates. The Group will calibrate the matrix to adjust the historical credit loss experience with forward-looking information. For instance, if forecast economic conditions (i.e., gross domestic products) are expected to deteriorate over the next year which can lead to an increased number of defaults in the manufacturing sector, the historical default rates are adjusted. At each reporting date, the historical observed default rates are updated and changes in the forward-looking estimates are analyzed.

The assessment of the correlation among historical observed default rates, forecast economic conditions and ECLs is a significant estimate. The amount of ECLs is sensitive to changes in circumstances and forecast economic conditions. The Group's historical credit loss experience and forecast of economic conditions may also not be representative of the customer's actual default in the future. The information about the ECLs on the Group's trade receivables is disclosed in Note 13 to the financial statements.

ALUMINUM CORPORATION OF CHINA LIMITED
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3. SIGNIFICANT ACCOUNTING ESTIMATES AND JUDGEMENTS (CONTINUED)

Estimates and assumptions (Continued)

(e) Estimated impairment of inventories

In accordance with the Group's accounting policy, the Group's management tests whether inventories suffered any impairment based on estimates of the net realizable amount of the inventories. For different types of inventories, it requires the estimation on selling prices, costs of conversion, selling expenses and the related tax expense to calculate the net realizable amount of inventories. For inventories held for executed sales contracts, management estimates the net realizable amount based on the contracted price. For raw materials and work-in-progress, management has established a model in estimating the net realizable amount at which the inventories can be realized in the normal course of business after considering the Group's manufacturing cycles, production capacity and forecasts, estimated future conversion costs and selling prices. Management also takes into account the price or cost fluctuations and other related matters occurring after the end of the reporting period which reflect conditions that existed at the end of the reporting period.

It is reasonably possible that if there is a significant change in circumstances, including the Group's business and the external environment, outcomes within the next financial year would be significantly affected.

(f) Coal reserve estimates and units-of-production amortization for coal mining rights

External qualified valuation professionals evaluate "economically recoverable reserves" based on the reserves estimated by external qualified exploration engineers in accordance with the PRC standards. The estimates of coal reserves are inherently imprecise and represent only the approximate amounts of the coal reserves because of the subjective judgements involved in developing such information. Economically recoverable reserve estimates are evaluated on a regular basis and have taken into account recent production and technical information about each mine.

ALUMINUM CORPORATION OF CHINA LIMITED
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3. SIGNIFICANT ACCOUNTING ESTIMATES AND JUDGEMENTS (CONTINUED)

Estimates and assumptions (Continued)

(g) Income tax

The Group estimates its income tax provision and deferred taxation in accordance with the prevailing tax rules and regulations, taking into account any special approvals obtained from the relevant tax authorities and any preferential tax treatment to which it is entitled in each location or jurisdiction in which the Group operates. There are many transactions and calculations for which the ultimate tax determination is uncertain during the ordinary course of business. The Group recognizes liabilities for anticipated tax audit issues based on the estimates of whether additional taxes will be due. Where the final tax outcome of these matters is different from the amounts that were initially recorded, the differences will impact on the income tax and deferred tax provisions in the period in which the determination is made.

Deferred tax assets are recognized for unused tax losses and deductible temporary differences, such as the provision for impairment of receivables, inventories and property, plant and equipment and accruals of expenses not yet deductible for tax purposes, to the extent that it is probable that taxable profits will be available against which the losses deductible temporary difference can be utilized. Significant management judgement is required to determine the amount of deferred tax assets that can be recognized, based upon forecast of future taxable profits which was complex and judgmental and was based on significant assumptions, including future tax rates, the possible utilization of loss carry forwards and future taxable profits that are affected by unexpected changes in the tax law framework and future market or economic conditions.

An entity shall recognize a deferred tax liability for all taxable temporary differences associated with investments in subsidiaries, associates and joint ventures, except to the extent that both of the following conditions are satisfied:

- the parent, investor or joint venturer is able to control the timing of the reversal of the temporary difference; and
- it is probable that the temporary difference will not reverse in the foreseeable future.

The Group considers that it has recorded adequate current tax provision and deferred taxes based on the prevailing tax rules and regulations and its current best estimates and assumptions. In the event that future tax rules and regulations or related circumstances change, adjustments to current and deferred taxation may be necessary which would impact on the Group's results or financial position.

ALUMINUM CORPORATION OF CHINA LIMITED
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3. SIGNIFICANT ACCOUNTING ESTIMATES AND JUDGEMENTS (CONTINUED)

Estimates and assumptions (Continued)

(h) Investments in joint ventures and associates - recoverable amount

In accordance with the Group's accounting policy, each investment in a joint venture and an associate is evaluated in every reporting period to determine whether there are any indicators of impairment. If any such indicators exist, an estimate of the recoverable amount is performed and an impairment loss is recognized to the extent that the carrying amount exceeds the recoverable amount. The recoverable amount of the investment in a joint venture and an associate is measured at the higher of fair value less costs of disposal and value in use.

A fair value measurement of a non-financial asset takes into account a market participant's ability to generate economic benefits by using the asset in its highest and best use or by selling it to another market participant that would use the asset in its highest and best use.

Value in use is also generally determined as the present value of the estimated future cash flows of those expected to arise from the continued use of the asset in its present form and its eventual disposal. Present values are determined using a risk-adjusted pre-tax discount rate appropriate to the risks inherent in the asset. Future cash flow estimates are based on expected production and sales volumes, commodity prices (considering current and historical prices, price trends and related factors) and operating costs. This policy requires management to make these estimates and assumptions which are subject to risk and uncertainty; hence there is a possibility that changes in circumstances will alter these projections, which may impact on the recoverable amounts of the investments. In such circumstances, some or all of the carrying value of the investments may be impaired and the impairment would be charged against profit or loss.

(i) Leases – Estimating the incremental borrowing rate

The Group cannot readily determine the interest rate implicit in a lease, and therefore, it uses an incremental borrowing rate ("IBR") to measure lease liabilities. The IBR is the rate of interest that the Group would have to pay to borrow over a similar term, and with a similar security, the funds necessary to obtain an asset of a similar value to the right-of-use asset in a similar economic environment. The IBR therefore reflects what the Group "would have to pay", which requires estimation when no observable rates are available (such as for subsidiaries that do not enter into financing transactions) or when it needs to be adjusted to reflect the terms and conditions of the lease. The Group estimates the IBR using observable inputs (such as market interest rates) when available and is required to make certain entity-specific estimates (such as the subsidiary's stand-alone credit rating).

ALUMINUM CORPORATION OF CHINA LIMITED
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4. REVENUE AND SEGMENT INFORMATION

(a) Revenue

Revenue recognized during the years is as follows:

	2017	2018	2019
Revenue from contracts with customers (net of value-added tax)			
Sales of goods	180,706,361	179,785,704	189,569,543
Rendering of services	163,732	215,557	186,703
Rental income	152,543	240,153	317,915
	<u>181,022,636</u>	<u>180,241,414</u>	<u>190,074,161</u>

Revenue from the rendering of services includes revenue from the supply of heat and water and the provision of machinery processing, transportation, packaging and other services.

(i) Disaggregated revenue information

For the year ended December 31, 2018

	Alumina segment	Primary aluminum segment	Energy segment	Trading	Corporate and other operating segments	Inter- segment elimination	Total
Type of goods or services							
Sales of goods	43,979,059	53,771,379	7,019,716	141,980,479	667,095	(67,632,024)	179,785,704
Rendering of services	—	—	215,557	—	—	—	215,557
Total revenue	<u>43,979,059</u>	<u>53,771,379</u>	<u>7,235,273</u>	<u>141,980,479</u>	<u>667,095</u>	<u>(67,632,024)</u>	<u>180,001,261</u>
Geographical markets							
Mainland China	43,979,059	53,771,379	7,235,273	132,763,920	667,095	(67,632,024)	170,784,702
Outside of mainland China	—	—	—	9,216,559	—	—	9,216,559
Total revenue from contracts with customers	<u>43,979,059</u>	<u>53,771,379</u>	<u>7,235,273</u>	<u>141,980,479</u>	<u>667,095</u>	<u>(67,632,024)</u>	<u>180,001,261</u>
Timing of revenue recognition							
Goods transferred at a point in time	43,979,059	53,771,379	7,019,716	141,980,479	667,095	(67,632,024)	179,785,704
Services transferred over time	—	—	215,557	—	—	—	215,557
Total revenue from contracts with customers	<u>43,979,059</u>	<u>53,771,379</u>	<u>7,235,273</u>	<u>141,980,479</u>	<u>667,095</u>	<u>(67,632,024)</u>	<u>180,001,261</u>
Revenue from contracts with customers							
External customers	14,586,564	41,313,516	7,036,936	116,610,176	454,069	—	180,001,261
Intersegment sales	29,392,495	12,457,863	198,337	25,370,303	213,026	—	67,632,024
	43,979,059	53,771,379	7,235,273	141,980,479	667,095	—	247,633,285
Intersegment adjustments and eliminations	(29,392,495)	(12,457,863)	(198,337)	(25,370,303)	(213,026)	—	(67,632,024)
Total revenue	<u>14,586,564</u>	<u>41,313,516</u>	<u>7,036,936</u>	<u>116,610,176</u>	<u>454,069</u>	<u>—</u>	<u>180,001,261</u>

ALUMINUM CORPORATION OF CHINA LIMITED
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4. REVENUE AND SEGMENT INFORMATION (CONTINUED)

(a) Revenue (Continued)

(i) Disaggregated revenue information (Continued)

For the year ended December 31, 2019

	Alumina segment	Primary aluminum segment	Energy segment	Trading	Corporate and other operating segments	Inter- segment elimination	Total
Type of goods or services							
Sales of goods	43,690,995	49,043,864	7,148,644	158,633,447	492,624	(69,440,031)	189,569,543
Rendering of services	—	—	186,703	—	—	—	186,703
Total revenue	<u>43,690,995</u>	<u>49,043,864</u>	<u>7,335,347</u>	<u>158,633,447</u>	<u>492,624</u>	<u>(69,440,031)</u>	<u>189,756,246</u>
Geographical markets							
Mainland China	43,690,995	49,043,864	7,335,347	152,857,432	492,624	(69,440,031)	183,980,231
Outside of mainland China	—	—	—	5,776,015	—	—	5,776,015
Total revenue from contracts with customers	<u>43,690,995</u>	<u>49,043,864</u>	<u>7,335,347</u>	<u>158,633,447</u>	<u>492,624</u>	<u>(69,440,031)</u>	<u>189,756,246</u>
Timing of revenue recognition							
Goods transferred at a point in time	43,690,995	49,043,864	7,148,644	158,633,447	492,624	(69,440,031)	189,569,543
Services transferred over time	—	—	186,703	—	—	—	186,703
Total revenue from contracts with customers	<u>43,690,995</u>	<u>49,043,864</u>	<u>7,335,347</u>	<u>158,633,447</u>	<u>492,624</u>	<u>(69,440,031)</u>	<u>189,756,246</u>
Revenue from contracts with customers							
External customers	14,117,594	37,349,482	7,099,211	130,864,398	325,561	—	189,756,246
Intersegment sales	29,573,401	11,694,382	236,136	27,769,049	167,063	—	69,440,031
	<u>43,690,995</u>	<u>49,043,864</u>	<u>7,335,347</u>	<u>158,633,447</u>	<u>492,624</u>	<u>—</u>	<u>259,196,277</u>
Intersegment adjustments and eliminations	(29,573,401)	(11,694,382)	(236,136)	(27,769,049)	(167,063)	—	(69,440,031)
Total revenue	<u>14,117,594</u>	<u>37,349,482</u>	<u>7,099,211</u>	<u>130,864,398</u>	<u>325,561</u>	<u>—</u>	<u>189,756,246</u>

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

4. REVENUE AND SEGMENT INFORMATION (CONTINUED)

(a) Revenue (Continued)

(i) Disaggregated revenue information (Continued)

The following table shows the amounts of revenue recognized in the current reporting period that were included in the contract liabilities at the beginning of the reporting period:

	2018	2019
Revenue recognized that was included in contract liabilities at the beginning of the reporting period:		
— Sale of goods	1,277,125	1,543,164
— Others	32,947	36,158
	<u>1,310,072</u>	<u>1,579,322</u>

(ii) Performance obligations

Information about the Group's performance obligations is summarized below:

Revenue from sales of products (including sales of and other materials)

The performance obligation is satisfied upon delivery of the industrial products and payment is generally due within 30 to 90 days from delivery, except for new customers, where payment in advance is normally required.

Sale of goods were made in a short period of time and the performance obligation was mostly satisfied in one year or less at the end of each year.

Rendering of services

The performance obligation is satisfied over time as services are rendered and payment is generally due upon completion of the relevant services.

The transaction prices allocated to the remaining performance obligations (unsatisfied or partially unsatisfied) as at December 31, 2018 and December 31, 2019 are as follows:

	2018	2019
Within one year	1,579,322	1,638,826
More than one year	132,844	125,758
	<u>1,712,166</u>	<u>1,764,584</u>

The remaining performance obligations expected to be recognized in more than one year relate to rendering of services that are to be satisfied within 1–10 years. All the other remaining performance obligations are satisfied in one year or less at the end of each year.

ALUMINUM CORPORATION OF CHINA LIMITED
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4. REVENUE AND SEGMENT INFORMATION (CONTINUED)

(b) Segment information

The presidents of the Company have been identified as the chief operating decision-makers. They are responsible for the review of internal reports in order to allocate resources to operating segments and assess their performance of these operating segments.

The presidents monitor the business from a product perspective comprising alumina, primary aluminum and energy products which are identified as separate reportable operating segments. In addition, the Group's trading business is identified as a separate reportable operating segment. The Group's operating segments also include corporate and other operating activities.

The presidents assess the performance of operating segments based on profit or loss before income tax in related periods. Unless otherwise stated below, the manner of assessment used by the presidents is consistent with that applied in these financial statements. Management has determined the operating segments based on the reports reviewed by the presidents that are used to make strategic decisions.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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4. REVENUE AND SEGMENT INFORMATION (CONTINUED)

(b) Segment information (Continued)

The Group's five reportable operating segments are summarized as follows:

- The alumina segment, which consists of the mining and purchase of bauxite and other raw materials, the refining of bauxite into alumina, and the sale of alumina both internally to the Group's aluminum enterprises and trading enterprises and externally to customers outside the Group. This segment also includes the production and sale of chemical alumina and metal gallium.
- The primary aluminum segment, which consists of the procurement of alumina and other raw materials, supplemental materials and electricity power, and the smelting of alumina to produce primary aluminum which is sold to internal trading enterprises and external customers, including Chinalco and its subsidiaries. This segment also includes the production and sale of carbon products and aluminum alloy and other aluminum products.
- The energy segment, which consists of the research and development, production and operation of energy products, mainly includes coal mining, electricity generation by thermal power, wind power and solar power, and the new energy-related equipment manufacturing business. Sales of coals are mainly made to the Group's internal and external coal consuming customers; electricity is sold to regional power grid corporations.
- The trading segment, which consists of the trading of alumina, primary aluminum, aluminum fabrication products, other non-ferrous metal products, coal products, raw materials and supplemental materials and logistics and transport services to internal manufacturing plants and external customers in the PRC. The products are sourced from fellow subsidiaries of the Group, international and domestic suppliers of the Group. Sales of products manufactured by the Group's manufacturing business are included in the total revenue of the trading segment and are eliminated with the segment revenue of the respective segments which supply the products to the trading segment.
- Corporate and other operating segments, which mainly include corporate management, research and development activities and others.

Prepaid current income tax and deferred tax assets are excluded from segment assets, and income tax payable and deferred tax liabilities are excluded from segment liabilities. All sales among the operating segments were conducted on terms mutually agreed among group companies, and have been eliminated on consolidation.

ALUMINUM CORPORATION OF CHINA LIMITED
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4. REVENUE AND SEGMENT INFORMATION (CONTINUED)

(b) Segment information (Continued)

	Year ended December 31, 2017						Total
	Alumina	Primary aluminium	Energy	Trading	Corporate and other operating segments	Inter-segment eliminations	
Total revenue	38,997,261	47,245,646	6,250,966	146,856,931	645,314	(58,973,482)	181,022,636
Inter-segment revenue	(24,431,939)	(10,693,678)	(517,269)	(23,159,115)	(171,481)	58,973,482	—
Sales of self-produced products (Note (i))				23,158,952			
Sales of products sourced from external suppliers				100,538,864			
Revenue from external customers	14,565,322	36,551,968	5,733,697	123,697,816	473,833	—	181,022,636
Segment profit/(loss) before income tax	3,290,945	826,632	(171,310)	733,896	(1,728,563)	97,575	3,049,175
Income tax expense							(643,706)
Profit for the year							<u>2,405,469</u>
Other items							
Finance income	233,016	83,996	44,015	192,327	153,336	—	706,690
Finance costs	(708,655)	(1,212,249)	(1,000,767)	(467,088)	(1,814,663)	—	(5,203,422)
Share of profits and losses of joint ventures	82,619	—	(383,263)	1,885	306,910	—	8,151
Share of profits and losses of associates	—	(16,887)	(181,667)	9,463	23,842	—	(165,249)
Amortization of land use rights	(42,768)	(25,120)	(15)	(6,376)	(17,300)	—	(91,579)
Depreciation and amortization (excluding the amortization of land use rights)	(2,781,350)	(2,516,058)	(1,510,218)	(79,342)	(86,200)	—	(6,973,168)
Gain on disposal of property, plant and equipment and land use right	47,243	40,106	(12,826)	1,673	543	—	76,739
Realized gain/(loss) on futures, forward and option contracts, net	3,398	(47,730)	1,585	(24,953)	43,749	—	(23,951)
Impairment of property, plant and equipment	(568)	—	(15,632)	—	—	—	(16,200)
Unrealized loss on futures, forward and option contracts, net	—	(17,033)	—	(92,719)	(21,321)	—	(131,073)
Gain on deemed disposal and disposal of subsidiaries	—	—	38,397	54,599	232,026	—	325,022
Changes for impairment of inventories	79,063	64,734	4,488	722	5,287	—	154,294
(Provision for)/reversal of impairment of receivables, net of bad debts recovered	(17,453)	269	(25,119)	(18,396)	—	—	(60,699)
Gain on disposal and dividends of available for sale	—	2,792	—	—	76,616	—	79,408
Gain on previously held equity interest remeasured at an acquisition-date fair value	—	—	117,640	—	—	—	117,640
Investments in associates	90,875	296,357	2,170,178	184,149	4,193,471	—	6,935,030
Investments in joint ventures	2,809,758	—	878,196	28,865	2,290,805	—	6,007,624
Additions during the period:							
Intangible assets	—	197	284,509	372	89	—	285,167
Land use rights	—	—	27,956	25,199	6,060	—	59,215
Property, plant and equipment (Note (ii))	2,642,350	5,533,168	1,268,051	64,005	256,093	—	9,763,667

Note:

- (i) The sales of self-produced products include sales of self-produced alumina amounting to RMB13,187 million, sales of self-produced primary aluminium amounting RMB6,680, and sales of self-produced other products amounting to RMB3,292 million.
- (ii) The additions to property, plant and equipment under sale and leaseback contracts are not included.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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4. REVENUE AND SEGMENT INFORMATION (CONTINUED)

(b) Segment information (Continued)

	Year ended December 31, 2018						
	Alumina	Primary aluminum	Energy	Trading	Corporate and other operating segments	Inter-segment eliminations	Total
Total revenue	44,150,937	53,802,172	7,235,273	142,017,821	667,235	(67,632,024)	180,241,414
Inter-segment revenue	(29,392,495)	(12,457,863)	(198,337)	(25,370,303)	(213,026)	67,632,024	—
Sales of self-produced products (Note (i))				34,454,943			
Sales of products sourced from external suppliers				82,192,575			
Revenue from external customers	14,758,442	41,344,309	7,036,936	116,647,518	454,209	—	180,241,414
Segment profit/(loss) before income tax	3,496,381	(929,298)	26,020	740,454	(1,267,146)	198,103	2,264,514
Income tax expense							(822,519)
Profit for the year							1,441,995
Other items							
Finance income	100,125	54,458	15,744	136,515	185,392	—	492,234
Finance costs	(399,344)	(1,131,622)	(1,047,285)	(366,807)	(1,937,438)	—	(4,882,496)
Share of profits and losses of joint ventures	37,377	8	(225,377)	9,010	(20,470)	—	(199,452)
Share of profits and losses of associates	(1,141)	17,102	(52,368)	19,375	56,367	—	39,335
Amortization of land use rights	(39,027)	(41,175)	(9,335)	(18,615)	—	—	(108,152)
Depreciation and amortization (excluding the amortization of land use rights)	(2,846,051)	(2,954,801)	(1,962,081)	(101,705)	(82,963)	—	(7,947,601)
Gain/(loss) on disposal of property, plant and equipment and land use right	53,116	15,211	24,780	20,036	(12,045)	—	101,098
Realized (loss)/gain on futures, forward and option contracts, net	(716)	—	2,855	47,601	(9,248)	—	40,492
Other income	57,777	38,220	29,858	6,718	2,794	—	135,367
Impairment of property, plant and equipment	—	—	(7,450)	(39,034)	—	—	(46,484)
Unrealized gain on futures, forward and option contracts, net	—	—	—	100,967	—	—	100,967
Gain/(loss) on disposal of subsidiaries	7,671	—	—	—	(4,154)	—	3,517
Changes for impairment of inventories	(54,463)	(273,796)	(7,884)	(17,802)	—	—	(353,945)
Reversal of (provision for) impairment of receivables, net of bad debts recovered	19,320	(9,406)	(23,327)	(84,922)	(9,621)	—	(107,956)
Dividends of equity investments at fair value through other comprehensive income	—	—	1,000	—	108,914	—	109,914
loss on disposal of associates	—	—	(1,904)	—	—	—	(1,904)
(Loss)/gain on previously held equity interest remeasured at an acquisition-date fair value	—	—	(3,177)	—	751,263	—	748,086
Investments in associates	89,734	558,759	2,064,425	131,691	3,518,853	—	6,363,462
Investments in joint ventures	989,840	—	435,867	77,211	1,890,431	—	3,393,349
Additions during the period:							
Intangible assets	99,089	753	2,754	514	194	—	103,304
Land use rights	2,786	—	—	52	—	—	2,838
Property, plant and equipment (Note (ii))	2,564,003	4,602,580	1,610,442	101,360	143,839	—	9,022,224

Note:

- (i) The sales of self-produced products include sales of self-produced alumina amounting to RMB16,561 million, sales of self-produced primary Aluminium amounting RMB13,517 million, and sales of self-produced other products amounting to RMB4,376 million.
- (ii) The additions to property, plant and equipment under sale and leaseback contracts (Note 20) are not included.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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4. REVENUE AND SEGMENT INFORMATION (CONTINUED)

(b) Segment information (Continued)

	Year ended December 31, 2019						
	Alumina	Primary aluminum	Energy	Trading	Corporate and other operating segments	Inter-segment eliminations	Total
Total revenue	43,899,982	49,089,019	7,345,971	158,686,280	492,940	(69,440,031)	190,074,161
Inter-segment revenue	(29,573,401)	(11,694,382)	(236,136)	(27,769,049)	(167,063)	69,440,031	—
Sales of self-produced products (Note (i))				24,374,356			
Sales of products sourced from external suppliers				106,542,875			
Revenue from external customers	14,326,581	37,394,637	7,109,835	130,917,231	325,877	—	190,074,161
Segment profit/(loss) before income tax	844,848	687,246	403,479	952,848	(987,704)	213,084	2,113,801
Income tax expense							(625,720)
Profit for the year							1,488,081
Other items							
Finance income	61,644	53,252	35,093	105,622	5,540	—	261,151
Finance costs	(651,238)	(1,328,730)	(1,064,769)	(223,928)	(1,652,514)	—	(4,921,179)
Share of profits and losses of joint ventures	86,245	—	(22,272)	3,767	202,375	—	270,115
Share of profits and losses of associates	(6,319)	11,621	(32,660)	36,579	39,546	—	48,767
Amortization of right-of-use assets	(495,693)	(338,975)	(146,139)	(45,541)	(49,477)	—	(1,075,825)
Depreciation and amortization (excluding the amortization of right-of-use assets)	(2,830,152)	(3,235,356)	(1,488,077)	(79,366)	(81,467)	—	(7,714,418)
(Loss)/gain on disposal of property, plant and equipment, and land use rights	(587,503)	830,205	(1,010)	7,216	(5,948)	—	242,960
Gain on disposal of business	262,677	—	—	—	—	—	262,677
Realized loss on futures, forward and option contracts, net	—	—	—	60,671	—	—	60,671
Other income	21,252	716	47,666	6,241	2,757	—	78,632
Impairment losses on property, plant and equipment and other non-current assets	(8,743)	(247,112)	(3,499)	—	—	—	(259,354)
Unrealized loss on futures, forward and option contracts, net	—	—	—	(9,851)	—	—	(9,851)
Gain on share of associates' net assets	—	—	—	—	295,288	—	295,288
Gain on disposal of a subsidiary	118	—	3,014	2,738	255,317	—	261,187
Gain on disposal of associates	—	—	159,514	—	—	—	159,514
Changes for impairment of inventories	69,740	166,331	(19,076)	34,136	—	—	251,131
Reversal of (provision for) impairment of receivables, net of bad debts recovered	6,837	1,088	(53,227)	(121,154)	(3,295)	—	(169,751)
Dividends of equity investments at fair value through other comprehensive income	—	—	1,000	—	96,775	—	97,775
Investments in associates	83,424	574,385	2,021,964	362,757	6,469,871	—	9,512,401
Investments in joint ventures	1,076,085	—	298,991	79,199	1,931,307	—	3,385,582
Additions during the period:							
Intangible assets	209,365	949,013	(5,062)	1,869	201	—	1,155,386
Right-of-use assets	1,080,285	131,797	8,411	27,365	—	—	1,247,858
Property, plant and equipment (Note (ii))	6,486,248	2,381,644	1,454,659	132,841	165,832	—	10,621,224

Note:

- (i) The sales of self-produced products include sales of self-produced Alumina amounting to RMB13,329 million, sales of self-produced primary Aluminium amounting RMB10,689 million, and sales of self-produced other products amounting to RMB356 million.
- (ii) The additions to property, plant and equipment under sale and leaseback contracts are not included.

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4. REVENUE AND SEGMENT INFORMATION (CONTINUED)

(b) Segment information (Continued)

	Alumina	Primary aluminum	Energy	Trading	Corporate and other operating segments	Total
As at December 31, 2018						
Segment assets	82,677,250	57,712,842	39,458,086	20,217,906	33,577,526	233,643,610
<i>Reconciliation:</i>						
Elimination of inter-segment receivables						(34,228,334)
Other eliminations						(155,283)
Corporate and other unallocated assets:						
Deferred tax assets						1,542,655
Prepaid income tax						162,103
Total assets						200,964,751
Segment liabilities	38,817,030	34,492,538	27,265,031	14,530,230	50,492,049	165,596,878
<i>Reconciliation:</i>						
Elimination of inter-segment payables						(34,228,334)
Corporate and other unallocated liabilities:						
Deferred tax liabilities						1,812,805
Income tax payable						113,783
Total liabilities						133,295,132
As at December 31, 2019						
Segment assets	90,584,165	63,155,573	38,886,172	17,360,278	49,658,116	259,644,304
<i>Reconciliation:</i>						
Elimination of inter-segment receivables						(58,081,964)
Other eliminations						(106,985)
Corporate and other unallocated assets:						
Deferred tax assets						1,522,216
Prepaid income tax						93,093
Total assets						203,070,664
Segment liabilities	47,247,335	38,588,473	26,582,436	9,308,667	66,771,364	188,498,275
<i>Reconciliation:</i>						
Elimination of inter-segment payables						(58,081,964)
Corporate and other unallocated liabilities:						
Deferred tax liabilities						1,712,739
Income tax payable						216,554
Total liabilities						132,345,604

ALUMINUM CORPORATION OF CHINA LIMITED
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4. REVENUE AND SEGMENT INFORMATION (CONTINUED)

(b) Segment information (Continued)

The Group mainly operates in Mainland China. Operating segment information by geographical location as follows:

	2017	2018	2019
Segment revenue from external customers			
— Mainland China	171,956,305	171,024,855	184,298,146
— Outside Mainland China	9,066,331	9,216,559	5,776,015
	<u>181,022,636</u>	<u>180,241,414</u>	<u>190,074,161</u>
		2018	2019
Non-current assets (excluding financial assets and deferred tax assets)			
— Mainland China		137,939,763	147,798,239
— Outside Mainland China		646,327	2,668,533
		<u>138,586,090</u>	<u>150,466,772</u>

For the year ended December 31, 2019, revenues of approximately RMB40,567 million (2017: RMB39,759 million, 2018: RMB32,852 million) were derived from entities directly or indirectly owned or controlled by the PRC government including Chinalco. These revenues are mainly attributable to the alumina, primary aluminium, energy and trading segments. There were no other individual customers from which the Group has derived revenue of 10% or more of the Group's revenue during the years ended December 31, 2017, 2018 and 2019.

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5. INTANGIBLE ASSETS

	Goodwill	Mining rights and others	Mineral exploration rights	Computer software, Electrolytic aluminium production quota and others	Total
Year ended December 31, 2018					
Opening net carrying amount	2,345,930	7,066,428	1,111,586	113,689	10,637,633
Additions	—	98,995	—	4,309	103,304
Acquisition of subsidiaries	1,163,949	728,066	—	1,285	1,893,300
Reclassification	—	7,072	(7,072)	—	—
Disposals	—	—	—	(168)	(168)
Amortization	—	(265,108)	—	(30,793)	(295,901)
Transfer from property, plant and equipment (Note 6)	—	41,148	—	484,068	525,216
Currency translation differences	754	5,782	9,445	—	15,981
Closing net carrying amount	3,510,633	7,682,383	1,113,959	572,390	12,879,365
As at December 31, 2018					
Cost	3,510,633	9,430,183	1,113,959	888,975	14,943,750
Accumulated amortization and impairment	—	(1,747,800)	—	(316,585)	(2,064,385)
Net carrying amount	3,510,633	7,682,383	1,113,959	572,390	12,879,365
	Goodwill	Mining rights and others	Mineral exploration rights	Computer software, Electrolytic aluminium production quota and others	Total
Year ended December 31, 2019					
Opening net carrying amount	3,510,633	7,682,383	1,113,959	572,390	12,879,365
Additions	—	467,640	—	687,746	1,155,386
Reclassification	—	115,871	(115,871)	—	—
Disposals	—	—	—	(9)	(9)
Amortization	—	(294,766)	—	(44,172)	(338,938)
Transfer from property, plant and equipment (Note 6)	—	—	—	63,370	63,370
Currency translation differences	259	1,783	3,244	—	5,286
Closing net carrying amount	3,510,892	7,972,911	1,001,332	1,279,325	13,764,460
As at December 31, 2019					
Cost	3,510,892	10,016,634	1,001,332	1,640,081	16,168,939
Accumulated amortization and impairment	—	(2,043,723)	—	(360,756)	(2,404,479)
Net carrying amount	3,510,892	7,972,911	1,001,332	1,279,325	13,764,460

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5. INTANGIBLE ASSETS (CONTINUED)

For the year ended December 31, 2019, the amortization expenses of intangible assets recognized in profit or loss were analyzed as follows:

	2017	2018	2019
Cost of sales	241,261	265,108	294,766
General and administrative expenses	34,616	30,793	44,172
	<u>275,877</u>	<u>295,901</u>	<u>338,938</u>

As at December 31, 2019, the Group has pledged intangible assets with a net carrying value amounting to RMB757 million (December 31, 2018: RMB773 million) for bank and other borrowings as set out in Note 24 to the financial statements.

As at December 31, 2019, the Group was in the process of applying for the certificates of mining rights with a carrying value amounting to RMB39 million (December 31, 2018: RMB21 million). There have been no litigations, claims or assessments against the Group for compensation with respect to the use of these rights to date. As at December 31, 2019, the carrying value of these rights only represented approximately 0.02% of the total asset value of the Group (December 31, 2018: approximately 0.01%). Management considers that it is probable that the Group can obtain the relevant ownership certificates from the appropriate authorities. The directors of the Company are of the opinion that the Group legally owns and has the rights to use the above mining rights, and that there is no material adverse impact on the overall financial position of the Group.

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5. INTANGIBLE ASSETS (CONTINUED)

Impairment testing of goodwill

The lowest level within the Group at which goodwill is monitored for internal management purposes is the operating segment level. Therefore, goodwill is allocated to the Group's cash-generating units ("CGUs") and groups of CGUs according to operating segments. A summary of goodwill allocated to each segment is presented below:

	December 31, 2018		December 31, 2019	
	Alumina	Primary aluminum	Alumina	Primary aluminum
Qinghai Branch	—	217,267	—	217,267
Guangxi Branch	189,419	—	189,419	—
Lanzhou Branch	—	1,924,259	—	1,924,259
PT. Nusapati Prima ("PTNP")	15,739	—	15,998	—
Shanxi Huaxing	1,163,949	—	1,163,949	—
	<u>1,369,107</u>	<u>2,141,526</u>	<u>1,369,366</u>	<u>2,141,526</u>

The recoverable amount of a CGU is determined based on value-in-use calculations. These calculation of VIU use pre-tax cash flow projections based on financial budgets approved by management covering a five-year period. Cash flows beyond the 5-year period are extrapolated using the estimated growth rate of 2% (2018: 2%) not exceeding the long-term average growth rate for the businesses in which the CGU operates. Other key assumptions applied in the impairment testing include future prices of aluminum and alumina, expected production and sales volumes, production costs and operating expenses. Management determined these key assumptions based on past performance and their expectations on market development. Furthermore, the Group adopts a pre-tax rate of 12.62% (2018: 12.62%) that reflects specific risks related to CGUs and groups of CGUs as the discount rate. The assumptions above are used in analyzing the recoverable amounts of CGUs and groups of CGUs within operating segments. These estimates and judgments may be affected by unexpected changes in the future market or economic conditions.

The directors of the Company are of the view that, based on their assessment, there was no impairment of goodwill as at December 31, 2019 and December 31, 2018.

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6. PROPERTY, PLANT AND EQUIPMENT

	Buildings	Machinery	Transportation facilities	Office and other equipment	Construction in progress	Total
Year ended December 31, 2018						
Opening net carrying amount	32,288,223	52,784,696	541,908	129,630	9,987,437	95,731,894
Reclassifications and internal transfers	3,204,611	3,600,371	75,277	5,149	(6,885,408)	—
Government grants	(468)	(113,481)	—	—	—	(113,949)
Transfer to intangible assets (Note 5)	—	—	—	—	(525,216)	(525,216)
Transfer to prepaid land lease payments (Note 19)	—	—	—	—	(382,242)	(382,242)
Transfer to investment properties (Note 7)	(11,039)	—	—	—	—	(11,039)
Transfer from investment properties (Note 7)	21,773	—	—	—	—	21,773
Additions	230,243	1,998,717	31,668	48,912	8,016,079	10,325,619
Acquisition of subsidiaries	4,633,728	4,026,062	17,443	5,937	3,149,060	11,832,230
Disposal of subsidiaries	—	(472)	(101)	(53)	(8,893)	(9,519)
Disposals	(251,212)	(2,505,158)	(39,827)	(3,347)	(275,391)	(3,074,935)
Depreciation	(1,266,607)	(6,087,890)	(116,807)	(28,018)	—	(7,499,322)
Impairment losses	—	(7,061)	—	—	(39,423)	(46,484)
Currency translation differences	99	146	34	27	—	306
Closing net carrying amount	38,849,351	53,695,930	509,595	158,237	13,036,003	106,249,116
As at December 31, 2018						
Cost	56,620,994	103,608,492	2,538,835	603,665	13,187,424	176,559,410
Accumulated depreciation and impairment	(17,771,643)	(49,912,562)	(2,029,240)	(445,428)	(151,421)	(70,310,294)
Net carrying amount	38,849,351	53,695,930	509,595	158,237	13,036,003	106,249,116

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6. PROPERTY, PLANT AND EQUIPMENT (CONTINUED)

	Buildings	Machinery	Transportation facilities	Office and other equipment	Construction in progress	Total
Year ended December 31, 2019						
Opening net carrying amount	38,849,351	53,695,930	509,595	158,237	13,036,003	106,249,116
Impact on initial application of IFRS 16 (Note 2.2)	(148,673)	(5,851,498)	—	—	(720,439)	(6,720,610)
Opening net book amount at January 1, 2019	38,700,678	47,844,432	509,595	158,237	12,315,564	99,528,506
Currency translation differences	89	103	17	46	—	255
Reclassifications and internal transfers	3,869,147	5,125,998	(29,181)	207,546	(9,173,510)	—
Transfer to intangible assets (Note 5)	—	—	—	—	(63,370)	(63,370)
Transfer to right-of-use assets	(107,368)	(495)	—	—	—	(107,863)
Transfer to investment properties (Note 7)	(179,564)	—	—	—	—	(179,564)
Additions	576,035	635,678	44,122	13,506	9,351,883	10,621,224
Transfer from right-of-use assets (Note 19) *	—	1,674,260	—	—	—	1,674,260
Government grants	(7,211)	(69,012)	—	—	—	(76,223)
Disposals	(79,280)	(378,816)	(19,672)	(938)	(70,201)	(548,907)
Disposal of subsidiaries	(85,851)	(73,432)	(3,270)	(239)	—	(162,792)
Depreciation	(1,849,121)	(5,121,646)	(100,547)	(23,402)	—	(7,094,716)
Impairment loss	(105,347)	(153,394)	(14)	(185)	(414)	(259,354)
Closing net carrying amount	40,732,207	49,483,676	401,050	354,571	12,359,952	103,331,456
As at December 31, 2019						
Cost	60,153,059	101,624,509	2,238,818	829,575	12,511,787	177,357,748
Accumulated depreciation and impairment	(19,420,852)	(52,140,833)	(1,837,768)	(475,004)	(151,835)	(74,026,292)
Net carrying amount	40,732,207	49,483,676	401,050	354,571	12,359,952	103,331,456

* This includes the right-of-use assets recognized previously under sale and leaseback contracts of RMB1,674 million that were reclassified from property, plant and equipment, upon initial adoption of IFRS 16. After the expiration of those contracts, they were measured as property, plant and equipment.

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6. PROPERTY, PLANT AND EQUIPMENT (CONTINUED)

For the years ended December 31, 2017, 2018 and 2019, depreciation expenses recognized in profit or loss are analyzed as follows:

	2017	2018	2019
Cost of sales	6,387,773	7,291,380	6,926,580
General and administrative expenses	160,143	201,337	161,547
Selling and distribution expenses	6,926	6,605	6,589
	<u>6,554,842</u>	<u>7,499,322</u>	<u>7,094,716</u>

As at December 31, 2019, the Group was in the process of applying for the ownership certificates of buildings with a net carrying value of RMB7,315 million (December 31, 2018: RMB5,639 million). There have been no litigations, claims or assessments against the Group for compensation with respect to the use of these buildings as at the date of approval of these financial statements.

As at December 31, 2019, the carrying value of these buildings only represented approximately 3.60% of the Group's total asset value (December 31, 2018: 2.81%). Management considers that it is probable that the Group can obtain the relevant ownership certificates from the appropriate authorities. The directors of the Company are of the opinion that the Group legally owns and has the rights to use the above buildings, and that there is no material adverse impact on the overall financial position of the Group.

For the year ended December 31, 2019, interest expenses of RMB289 million (2017: RMB344 million, 2018: RMB518 million) (Note 28) arising from borrowings attributable to the construction of property, plant and equipment during the year were capitalized at an annual rate ranging from 4.00% to 6.96% (2017: 4.41% to 8.00%, 2018: 4.54% to 7.00%) (Note 28), and were included in additions to property, plant and equipment.

As at December 31, 2019, the Group has pledged property, plant and equipment at a net carrying value amounting to RMB4,946 million (December 31, 2018: RMB4,168 million) for bank and other borrowings as set out in Note 24 to the financial statements.

As at December 31, 2019, the carrying value of temporarily idle property, plant and equipment of the Group was RMB952 million (December 31, 2018: RMB675 million).

The net carrying amounting of the Group's fixed assets held under finance leases included in the total amounts of the machinery and construction in progress at December 31, 2018 were RMB10,678 million and RMB112 million, respectively. The accumulated depreciation of the Group's fixed assets held under finance leases amounted to RMB2,011 million.

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6. PROPERTY, PLANT AND EQUIPMENT (CONTINUED)

Impairment testing for property, plant and equipment

When any indicators of impairment are identified, property, plant and equipment are reviewed for impairment based on each CGU. The CGU is an individual plant or entity. The carrying values of these individual plants or entities were compared to the recoverable amounts of the CGUs, which were based predominantly on value in use. Value-in-use calculations use pre-tax cash flow projections based on financial budgets approved by management covering a five-year period. Cash flows beyond the five-year period are extrapolated using the same cash flow projections of the fifth year. Other key assumptions applied in the impairment testing include the expected product price, demand for the products, product cost and related expenses. Management determined these key assumptions based on past performance and their expectations on market development. Further, the Group adopts a pre-tax and non-inflation rate of 10.16% (2018: 10.16%) that reflects specific risks related to the CGUs as discount rates. The assumptions above are used in analyzing the recoverable amounts of the CGUs within operating segments. These estimates and judgments may be affected by unexpected changes in the future market or economic conditions.

For the CGUs with indicators of impairment identified, the assets were not further impaired during the current year based on the impairment testing (2018: Nil).

In addition to the CGUs for which impairment was tested based on value in use, the Group also assessed the recoverable amounts for property, plant and equipment about to be disposed or abandoned, and impairment losses of RMB259 million were provided during the year ended December 31, 2019 (2018: RMB46 million, 2017: RMB16 million).

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7. INVESTMENT PROPERTIES

	Buildings	Land use rights	Total
Year ended December 31, 2018			
Opening net carrying amount	254,061	1,078,309	1,332,370
Transfer from property, plant and equipment (Note 6)	11,039	—	11,039
Transfer to property, plant and equipment (Note 6)	(21,773)	—	(21,773)
Disposal	—	(143,401)	(143,401)
Depreciation	(7,353)	(14,876)	(22,229)
Closing net carrying amount	<u>235,974</u>	<u>920,032</u>	<u>1,156,006</u>
As at December 31, 2018			
Cost	251,626	939,015	1,190,641
Accumulated depreciation	<u>(15,652)</u>	<u>(18,983)</u>	<u>(34,635)</u>
Net carrying amount	<u>235,974</u>	<u>920,032</u>	<u>1,156,006</u>
Year ended December 31, 2019			
Opening net carrying amount	235,974	920,032	1,156,006
Additions	44,063	—	44,063
Transfer from property, plant and equipment (Note 6)	179,564	—	179,564
Transfer from right-of-use assets (Note 19)	—	239,765	239,765
Disposal	(36,949)	(52,537)	(89,486)
Depreciation	(8,484)	(18,075)	(26,559)
Impairment	—	(87)	(87)
Closing net carrying amount	<u>414,168</u>	<u>1,089,098</u>	<u>1,503,266</u>
As at December 31, 2019			
Cost	508,705	1,159,343	1,668,048
Accumulated depreciation and impairment	<u>(94,537)</u>	<u>(70,245)</u>	<u>(164,782)</u>
Net carrying amount	<u>414,168</u>	<u>1,089,098</u>	<u>1,503,266</u>

The Group's investment properties consist of land use rights held for capital appreciation and buildings leased to third parties under operating leases.

As at December 31, 2019, the Group was in the process of applying for the ownership certificates of investment properties with a net carrying value of RMB255 million (December 31, 2018: RMB68 million). There have been no litigations, claims or assessments against the Group for compensation with respect to the use of these rights to date. As at December 31, 2019, the carrying value of these investment properties only represented approximately 0.13% of the total asset value of the Group (December 31, 2018: 0.03%). Management considers that it is probable that the Group can obtain the relevant ownership certificates from the appropriate authorities. The directors of the Company are of the opinion that the Group legally owns and has the rights to use the above investment properties, and that there is no material adverse impact on the overall financial position of the Group.

As at December 31, 2019, the fair value of the buildings was approximately RMB1,071 million (December 31, 2018: RMB781 million), which was estimated based on the market price of comparable buildings in the nearby area. The directors of the Company estimated that the fair value of the land use right is likely to be RMB1,269 million (December 31, 2018: RMB1,287 million), which was determined based on the transaction prices for similar lands nearby.

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8. INVESTMENTS IN JOINT VENTURES AND ASSOCIATES

(a) Investments in joint ventures

Movements in investments in joint ventures are as follows:

	2018	2019
As at January 1	6,007,624	3,393,349
Capital injections	90,000	50,000
A joint venture changed into a subsidiary	(2,048,780)	—
Disposal*	—	(114,604)
Share of profits and losses for the year	(199,452)	270,115
Share of changes in reserves	(2,837)	8,746
Cash dividends declared	(236,253)	(222,024)
Impairment	(216,953)	—
As at December 31	<u>3,393,349</u>	<u>3,385,582</u>

* In March 2019, a subsidiary of the Group Ningxia Energy transferred, through an auction transaction, its 50% equity interest in Ningxia Zhongning Power Co., Ltd.

As at December 31, 2019, all joint ventures of the Group were unlisted.

As at December 31, 2019, particulars of the Group's material joint venture is as follows:

Name	Place of establishment and operation	Registered and paid-in capital	Principal activities	Effective equity interest held		
				Ownership interest	Voting power	Profit sharing
Guangxi Huayin Aluminum Co., Ltd. * (“Guangxi Huayin”) (廣西華銀鋁業有限公司)	PRC/ Mainland China	2,441,987	Manufacturing	33%	33%	33%

Guangxi Huayin, which is considered a material joint venture of the Group, is accounted for using the equity method.

* The English names represent the best effort by management of the Group in translating the Chinese names of the Companies as they do not have any official English names.

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8. INVESTMENTS IN JOINT VENTURES AND ASSOCIATES (CONTINUED)

(a) Investments in joint ventures (Continued)

The following table illustrates the summarized financial information in respect of Guangxi Huayin :

	2018	2019	
Cash and cash equivalents	232,022	261,447	
Other current assets	1,233,669	1,222,290	
Current assets	<u>1,465,691</u>	<u>1,483,737</u>	
Non-current assets	<u>5,473,480</u>	<u>5,249,101</u>	
Financial liabilities	840,000	1,106,593	
Other current liabilities	961,283	960,077	
Current liabilities	<u>1,801,283</u>	<u>2,066,670</u>	
Non-current liabilities	<u>814,691</u>	<u>414,299</u>	
Net assets	<u>4,323,197</u>	<u>4,251,869</u>	
Non-controlling interests	<u>—</u>	<u>—</u>	
Reconciliation to the Group's interest in the joint venture:			
Proportion of the Group's ownership	33%	33%	
Group's share of net assets of the joint venture	1,426,655	1,403,117	
Carrying amount of the investment	<u>1,426,655</u>	<u>1,403,117</u>	
	2017	2018	2019
Revenue	5,547,895	5,173,801	5,226,893
Gross profit	1,844,116	979,991	1,303,254
Interest income	31,754	6,365	9,781
Depreciation and amortization	524,090	509,556	525,109
Interest expenses	132,273	77,438	63,351
Profit before income tax	1,507,883	504,875	621,315
Income tax	<u>214,264</u>	<u>78,827</u>	<u>79,300</u>
Other comprehensive income	<u>—</u>	<u>—</u>	<u>—</u>
Total comprehensive income for the year	<u>1,293,619</u>	<u>426,048</u>	<u>542,015</u>
Share of the joint ventures' profits and losses for the year	<u>426,894</u>	<u>140,693</u>	<u>178,865</u>
Dividend received	<u>40,260</u>	<u>132,000</u>	<u>198,000</u>

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8. INVESTMENTS IN JOINT VENTURES AND ASSOCIATES (CONTINUED)

(a) Investments in joint ventures (Continued)

The following table illustrates the aggregate financial information of the Group's joint ventures that are not individually material:

	2018	2019
Share of the joint ventures' profits and losses for the year	(340,145)	91,250
Share of the joint ventures' total comprehensive income	(340,145)	91,250
Aggregate carrying amount of the Group's investments in joint ventures	<u>1,858,386</u>	<u>1,870,538</u>

There were no material contingent liabilities relating to the Group's interests in the joint ventures and the joint ventures themselves.

(b) Investments in associates

Movements in investments in associates are as follows:

	2018	2019
As at January 1	6,935,030	6,363,462
Investment to Yunnan Aluminium (Note (1), Note (27))	—	1,491,736
Investment to Heqing Yixin Aluminum Industry Co., Ltd. (鹤庆溢鑫铝业有限公司) ("Yixin Aluminum") (Note (2), Note (27))	—	941,160
Capital injections, other than to Yunnan Aluminium and Yixin Aluminum	315,300	729,368
Subsidiaries changed into associates	—	16,283
Associates changed into subsidiaries	(862,214)	—
Capital reduction	(32,720)	(20,250)
Share of profits and losses for the year	39,335	48,767
Cash dividends declared	(36,157)	(50,314)
Share of changes in reserves	4,888	(7,811)
As at December 31	<u>6,363,462</u>	<u>9,512,401</u>

Note (1): Investment to Yunnan Aluminium

On December 19, 2019, the Company and Yunnan Aluminium entered into a Share Subscription Agreements ("Subscription Agreements"), pursuant to which the Company subscribed for 314,050,688 shares of Yunnan Aluminium at a price of RMB4.10 per share with the total subscription amount of RMB1,288 million. Upon completion of the subscription, the Company obtained 10.04% equity interests in Yunnan Aluminium.

The Group considers that it has significant influence over Yunnan Aluminium even though it owns less than 20% of the voting rights, on the grounds that after the investment, the Group is the second largest shareholder of Yunnan Aluminium and one out of the eleven directors of the board of directors of Yunnan Aluminium exercises director's rights on behalf of the Group.

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8. INVESTMENTS IN JOINT VENTURES AND ASSOCIATES (CONTINUED)

(b) Investments in associates (Continued)

Note (1): Investment to Yunnan Aluminium (Continued)

As at the date of this announcement, Chinalco is the controlling Shareholder of the Company, and Yunnan Aluminium is a subsidiary of Chinalco. Therefore, Yunnan Aluminium is a connected person of the Company under the Hong Kong Listing Rules. As such, the transaction contemplated under the Shares Subscription Agreement constitutes a connected transaction under Chapter 14A of the Hong Kong Listing Rules. The investment constitutes a related party transaction which was disclosed in Note 35 (a).

The investment to Yunnan Aluminium, which is a listed company, is conducive for resolving business competitions between the Company and Yunnan Aluminium and is in line with the development strategies and in the whole interests of the Company.

The excess of the fair value of identifiable net assets as at the acquisition date over the consideration transferred approximates to RMB204 million, which was mainly arising from the fair value adjustments for certain intangible assets according to a professional valuer's report, was recognized in other gains for the year ended December 31, 2019.

Note (2): Investment to Yixin Aluminium

On December 10, 2019, the Company entered into the Capital Contribution Agreement with shareholders of Yixin Aluminium, including Yunnan Aluminium, Wenshan Aluminium Co., Ltd. ("Wenshan Aluminium") and three individual shareholders, pursuant to which the Company agreed to make a capital contribution of RMB850 million in cash to Yixin Aluminium. Upon completion of the capital contribution, the Company holds approximately 38.90% equity investments of Yixin Aluminium.

Chinalco is the controlling Shareholder of the Company, and Yunnan Aluminium, Wenshan Aluminium and Yixin Aluminium are subsidiaries of Chinalco. Therefore, Yunnan Aluminium, Wenshan Aluminium and Yixin Aluminium are connected persons of the Company under the Hong Kong Listing Rules. As such, the transaction contemplated under the Capital Contribution Agreement constitutes a connected transaction under Chapter 14A of the Hong Kong Listing Rules. The investment constitutes a related party transaction which was disclosed in Note 35(a).

The investment to Yixin Aluminium is to facilitate the Company in participating in the green development layout on the integration of water, electricity and aluminum in Yunnan Province and obtaining competitive assets for its principal business.

The excess of the fair value of identifiable net assets as at the acquisition date over the consideration transferred approximated to RMB91 million, which was mainly arising from the fair value adjustments for constructions according to a professional valuer's report, was recognized in other gains for the year ended December 31, 2019.

As at December 31, 2019, all associates, except for Yunnan Aluminium, of the Group were unlisted.

As at December 31, 2019, no associate was individually material to the Group.

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8. INVESTMENTS IN JOINT VENTURES AND ASSOCIATES (CONTINUED)

(b) Investments in associates (Continued)

The following table illustrates the aggregate financial information of the Group's associates that are not individually material:

	2018	2019
Share of the associates' profits and losses	39,335	48,767
Share of the associates' total comprehensive income	39,335	48,767
Aggregate carrying amount of the Group's investments in the associates	6,363,462	9,512,401

As at December 31, 2019, there were no proportionate interests of the Group in the associates' capital commitments (December 31, 2018: Nil).

As at December 31, 2019, the Group had pledged investments in associates amounting to RMB539 million (December 31, 2018: investments in associates amounting to RMB536 million) as set out in Note 24 to the financial statements.

There were no material contingent liabilities relating to the Group's interests in the associates and the associates themselves.

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9. EQUITY INVESTMENTS DESIGNATED AT FAIR VALUE THROUGH OTHER COMPREHENSIVE INCOME/AVAILABLE-FOR-SALE FINANCIAL INVESTMENTS

	December 31, 2018	December 31, 2019
Equity investments designated at fair value through other comprehensive income		
Listed equity investments, at fair value		
Dongxing securities Co., Ltd.(東興證券)	6,441	8,853
	<u>6,441</u>	<u>8,853</u>
Unlisted equity investments		
Sanmenxia Dachang Mining Co., Ltd. (三門峽達昌礦業有限公司)	20,926	20,905
Inner Mongolia Ganqimaodu Port Development Co., Ltd. (內蒙古甘其毛都港務發展股份有限公司)	18,010	30,410
Yinchuan Economic and Technological Development Zone Investment Holding Co., Ltd. (銀川經濟技術開發區投資控股有限公司)	19,306	20,000
China Color International Alumina Development Co., Ltd. (中色國際氧化鋁開發有限公司)	9,000	6,614
Luoyang Jianyuan Mining Co., Ltd. (洛陽建元礦業有限公司)	4,948	4,960
Ningxia Ningdian Logistics Transportation Co., Ltd. (寧夏寧電物流運輸有限公司)	1,194	1,640
Chinalco Innovative Development Investment Company Limited (“Chinalco Innovative”) (中鋁創投)	—	365,681
Size Industry Investment Fund (Note)	1,650,000	1,653,251
Fangchenggang Chisha Pier Co., Ltd. (防城港赤沙碼頭有限公司)	—	700
Xingxian Shengxing Highway Investment Management Co., Ltd. (興縣盛興公路投資管理有限公司)	—	126,237
	<u>1,723,384</u>	<u>2,230,398</u>
	<u>1,729,825</u>	<u>2,239,251</u>

The above equity investments were irrevocably designated at fair value through other comprehensive income as the Group considers these investments to be strategic in nature.

Note:

Included in the unlisted investments is mainly the equity investment in Size Industry Investment Fund. In 2017, the Company entered into a series of agreements with Bank of Communications International Trust Co., Ltd. (“BOCOMMTRUST”) (交銀國際信託有限公司), Bocommtrust Asset Management Co., Ltd.* (“Bocommtrust Asset”) (交銀國信資產管理有限公司), a subsidiary of BOCOMMTRUST, and Chinalco Jianxin Investment Fund Management (Beijing) Company Limited* (“Chinalco Jianxin”) (中鋁建信投資基金管理(北京)有限公司) to establish Beijing Chalco Bocom Size (“Size Industry Investment Fund”) (北京中鋁交銀四則產業投資基金管理合夥企業(有限合夥)). According to these agreements, BOCOMMTRUST acted as the prioritised limited partner and the Company as the secondary limited partner of Size Industry Investment Fund, with the maximum amount of capital contribution of RMB6,700 million and RMB3,300 million, respectively. Bocommtrust Asset and Chinalco Jianxin are the general partner and the manager of Size Industry Investment Fund, respectively. The purpose of Size Industry Investment Fund is to invest in the Company’s subsidiaries, associates or joint ventures in the form of debt financing.

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9. EQUITY INVESTMENTS DESIGNATED AT FAIR VALUE THROUGH OTHER COMPREHENSIVE INCOME/AVAILABLE-FOR-SALE FINANCIAL INVESTMENTS (CONTINUED)

Note: (Continued)

As at December 31, 2019, Size Industry Investment Fund made four investments in three of the Company's associates and one of the Company's joint ventures amounting to RMB5,000 million in the form of debt. The Company and BOCOMMTRUST contributed capital of RMB1,650 million and RMB3,350 million to Size Industry Investment Fund, respectively.

Because the variable return of Size Industry Investment Fund depends on the selection of investment targets, the timing and size of the investment fund and the rate of return, which are all determined by BOCOMMTRUST under its full authority, the directors of the Company are of the opinion that the Company did not have control or joint control over, or significant influence over Size Industry Investment Fund. Therefore, the Company's investment in Size Industry Investment Fund was accounted for as an equity investment designated at fair value through other comprehensive income.

* The English names represent the best effort made by management of the Group in translating the Chinese names of the Companies as the companies do not have any official English names.

10. DEFERRED TAX

Deferred tax assets and liabilities are offset when there is a legally enforceable right to offset current income tax assets against current income tax liabilities and when the deferred taxes relate to the same tax authority.

The movements in deferred tax assets and liabilities during the year ended December 31, 2019 without taking into consideration the offsetting of balances within the same tax jurisdiction are as follows:

Movements in deferred tax assets:

	Provision for impairment	Accrued expenses	Tax losses	Unrealized profit at consolidation	Others	Total
As at January 1, 2018	525,439	264,209	539,899	166,043	168,647	1,664,237
Acquisition of subsidiaries	360	—	—	—	7,734	8,094
(Charged)/credited to profit or loss	(139,956)	(21,839)	76,338	3,833	5,989	(75,635)
As at December 31, 2018	<u>385,843</u>	<u>242,370</u>	<u>616,237</u>	<u>169,876</u>	<u>182,370</u>	<u>1,596,696</u>
As at January 1, 2019	385,843	242,370	616,237	169,876	182,370	1,596,696
Credited/(charged) to profit or loss	59,218	(33,214)	(40,047)	(521)	(2,956)	(17,520)
As at December 31, 2019	<u>445,061</u>	<u>209,156</u>	<u>576,190</u>	<u>169,355</u>	<u>179,414</u>	<u>1,579,176</u>

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10. DEFERRED TAX (CONTINUED)

Movements in deferred tax liabilities:

	Interest capitalisation	Fair value changes of financial assets	Depreciation and amortization	Fair value adjustments arising from acquisition of subsidiaries	Total
As at January 1, 2018	52,934	5,972	7,659	988,848	1,055,413
Exchange realignment	—	—	—	1,353	1,353
Credited to other comprehensive income	—	(3,769)	—	—	(3,769)
Acquisition of subsidiaries	—	—	—	822,229	822,229
(Credited)/charged to profit or loss	(9,102)	3,403	24,830	(27,511)	(8,380)
As at December 31, 2018	<u>43,832</u>	<u>5,606</u>	<u>32,489</u>	<u>1,784,919</u>	<u>1,866,846</u>
As at January 1, 2019	43,832	5,606	32,489	1,784,919	1,866,846
Exchange realignment	—	—	—	416	416
Credited to other comprehensive income	—	14,642	—	—	14,642
Credited to profit or loss	(5,825)	(12,517)	(8,616)	(85,247)	(112,205)
As at December 31, 2019	<u>38,007</u>	<u>7,731</u>	<u>23,873</u>	<u>1,700,088</u>	<u>1,769,699</u>

The temporary differences associated with investments in the Group's associates and joint ventures, for which a deferred tax liability has not been recognized in the periods presented, aggregate to RMB827 million (2018: RMB438 million), considering dividends from investments in associates and joint ventures are exempted from the PRC income tax and the Group has no plan to dispose any of these investees in the foreseeable future.

For presentation purposes, certain deferred tax assets and liabilities have been offset in the consolidated statement of financial position. The following is an analysis of the deferred tax balances of the Group for financial reporting purposes:

	December 31, 2018	December 31, 2019
Net deferred tax assets	<u>1,542,655</u>	<u>1,522,216</u>
Net deferred tax liabilities	<u>1,812,805</u>	<u>1,712,739</u>

As at December 31, 2019, the Group has not recognized deferred tax assets of RMB1,467 million (December 31, 2018: RMB2,634 million) in respect of accumulated tax losses amounting to RMB6,210 million (December 31, 2018: RMB11,387 million) arising in Mainland China and deferred tax assets of RMB2,287 million (December 31, 2018: RMB1,660 million) in respect of deductible temporary differences amounting to RMB9,160 million (December 31, 2018: RMB7,992 million) as it was considered not probable that those assets would be realized. The above tax losses will expire in one to five years if not utilized.

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10. DEFERRED TAX (CONTINUED)

As at December 31, 2019, the expiry profile of these unprovided tax losses was analyzed as follows:

	December 31, 2018	December 31, 2019
Expiring in		
2019	6,753,096	—
2020	711,878	690,646
2021	975,081	958,188
2022	1,211,002	1,211,002
2023	1,736,412	997,376
2024	—	2,353,070
	<u>11,387,469</u>	<u>6,210,282</u>

11. OTHER NON-CURRENT ASSETS

	December 31, 2018	December 31, 2019
Financial assets		
- Other long-term receivables	204,718	128,673
Prepayment for mining rights	808,736	813,822
Long-term prepaid expenses	667,772	648,983
Deferred losses for sale and leaseback transactions (Note)	1,323,221	766,548
Others	1,438,198	849,817
	<u>4,237,927</u>	<u>3,079,170</u>
	<u>4,442,645</u>	<u>3,207,843</u>

Note: As disclosed in Note 20, the Group entered into several sale and leaseback agreements which constitute finance leases during the year. The deferred losses resulted from the sale are classified as other non-current assets and were amortized over the useful lives of the assets leased back.

As at December 31, 2019 and December 31, 2018, all amounts were denominated in RMB.

As at December 31, 2019 and December 31, 2018, all amounts in other non-current assets were non-interest-bearing.

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12. INVENTORIES

	December 31, 2018	December 31, 2019
Raw materials	8,362,697	6,825,650
Work-in-progress	8,684,506	7,847,599
Finished goods	3,280,641	4,501,633
Spare parts	879,794	842,734
Packaging materials and others	63,227	57,870
	<u>21,270,865</u>	<u>20,075,486</u>
Less: provision for impairment of inventories	<u>(811,197)</u>	<u>(560,066)</u>
	<u>20,459,668</u>	<u>19,515,420</u>

Movements in the provision for impairment of inventories are as follows:

	2018	2019
As at January 1	457,252	811,197
Provision for impairment of inventories	2,413,098	1,503,406
Disposal of subsidiary	—	(772)
Reversal arising from increase in net realizable value	(165,510)	(340,134)
Written off upon sales of inventories	<u>(1,893,643)</u>	<u>(1,413,631)</u>
As at December 31	<u>811,197</u>	<u>560,066</u>

As at December 31, 2019 and December 31, 2018, the Group had not pledged inventories for bank and other borrowings.

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13. TRADE AND NOTES RECEIVABLES

	December 31, 2018	December 31, 2019
Trade receivables	5,868,796	5,273,969
Less: provision for impairment	(659,261)	(714,857)
	<u>5,209,535</u>	<u>4,559,112</u>
Notes receivable	2,894,482	2,834,011
	<u>8,104,017</u>	<u>7,393,123</u>

As at December 31, 2019, except for trade and notes receivables of the Group amounting to RMB1,111 million (December 31, 2018: RMB1,403 million) which were denominated in USD, all trade and notes receivables were denominated in RMB.

Included in the Group's trade and notes receivables are amounts due from the Group's joint ventures and associates of RMB788 million (December 31, 2018: RMB820 million) and RMB0.03 million (December 31, 2018: RMB7 million), respectively, which are repayable on credit terms similar to those offered to the major customers of the Group.

As at December 31, 2019, the Group had pledged notes receivable amounting to RMB667 million to exchange notes receivable (December 31, 2018: notes receivable amounting to RMB934 million) as set out in Note 24 to the financial statements.

Trade receivables are non-interest-bearing and are generally on terms of 3 to 12 months. Certain of the Group's sales were on advance payments or documents against payment. In some cases, these terms are extended for qualifying long term customers that have met specific credit requirements. As at December 31, 2019, the ageing analysis of trade and notes receivables was as follows:

	December 31, 2018	December 31, 2019
Within 1 year	3,320,735	2,907,407
Between 1 and 2 years	906,302	742,477
Between 2 and 3 years	158,162	377,836
Over 3 years	1,483,597	1,246,249
	<u>5,868,796</u>	<u>5,273,969</u>
Less: provision for impairment	(659,261)	(714,857)
	<u>5,209,535</u>	<u>4,559,112</u>

ALUMINUM CORPORATION OF CHINA LIMITED
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13. TRADE AND NOTES RECEIVABLES (CONTINUED)

Impairment under IFRS 9 for the year ended December 31, 2018 and 2019

An impairment analysis is performed at each reporting date using a provision matrix to measure expected credit losses. The provision rates are based on days past due for groupings of various customer segments with similar loss patterns (i.e., by geographical region, product type, customer type and rating, and coverage by letters of credit or other forms of credit insurance). The calculation reflects the probability-weighted outcome, the time value of money and reasonable and supportable information that is available at the reporting date about past events, current conditions and forecasts of future economic conditions.

Set out below is the information about the credit risk exposure on the Group's trade receivables using a provision matrix:

As at December 31, 2018

	Gross carrying amount	Expected credit losses	Expected credit loss rate (%)
Alumina and primary aluminum			
Within 1 year	401,691	3,696	0.92
Between 1 and 2 years	55,766	6,179	11.08
Between 2 and 3 years	16,546	14,893	90.01
Over 3 years	379,213	359,759	94.87
	<u>853,216</u>	<u>384,527</u>	<u>/</u>
Trading			
Within 1 year	473,153	662	0.14
Between 1 and 2 years	4,146	70	1.68
Between 2 and 3 years	74	3	3.80
Over 3 years	19,422	3,787	19.50
	<u>496,795</u>	<u>4,522</u>	<u>/</u>
Energy			
Within 1 year	88,462	3,388	3.83
Between 1 and 2 years	3,217	685	21.28
Between 2 and 3 years	15,417	3,688	23.92
Over 3 years	12,710	6,216	48.91
	<u>119,806</u>	<u>13,977</u>	<u>/</u>
Corporate and other operating segments			
Within 1 year	108,627	6,539	6.02
Between 1 and 2 years	10,974	7,767	70.78
Between 2 and 3 years	4,026	3,823	94.96
Over 3 years	25,800	25,142	97.45
	<u>149,427</u>	<u>43,271</u>	<u>/</u>
	<u>1,619,244</u>	<u>446,297</u>	
Individually assessed trade receivables	<u>4,249,552</u>	<u>212,964</u>	
	<u>5,868,796</u>	<u>659,261</u>	

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13. TRADE AND NOTES RECEIVABLES (CONTINUED)

As at December 31, 2019

	Gross carrying amount	Expected credit losses	Expected credit loss rate (%)
Alumina and primary aluminum			
Within 1 year	207,602	1,910	0.92
Between 1 and 2 years	47,883	5,305	11.08
Between 2 and 3 years	20,712	18,643	90.01
Over 3 years	205,395	194,858	94.87
	<u>481,592</u>	<u>220,716</u>	/
Trading			
Within 1 year	113,596	159	0.14
Between 1 and 2 years	—	—	1.69
Between 2 and 3 years	1,001	41	4.05
Over 3 years	79,793	15,560	19.50
	<u>194,390</u>	<u>15,760</u>	/
Energy			
Within 1 year	348,399	13,343	3.83
Between 1 and 2 years	11,722	2,496	21.29
Between 2 and 3 years	9,073	2,170	23.92
Over 3 years	7,269	3,555	48.91
	<u>376,463</u>	<u>21,564</u>	/
Corporate and other operating segments			
Within 1 year	51,774	3,117	6.02
Between 1 and 2 years	18,129	12,831	70.78
Between 2 and 3 years	5,399	5,127	94.96
Over 3 years	6,176	6,019	97.45
	<u>81,478</u>	<u>27,094</u>	/
	<u>1,133,923</u>	<u>285,134</u>	
Individually assessed trade receivables	<u>4,140,046</u>	<u>429,723</u>	
	<u>5,273,969</u>	<u>714,857</u>	

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13. TRADE AND NOTES RECEIVABLES (CONTINUED)

Movements in the loss allowance for impairment of trade and notes receivables are as follows:

	2018	2019
As at January 1	546,102	659,261
Effect of adoption of IFRS 9	112,407	—
At beginning of year	<u>658,509</u>	<u>659,261</u>
Impairment loss	64,544	236,238
Written off	(33,469)	(97,554)
Reversal	(20,466)	(83,095)
Others	<u>(9,857)</u>	<u>7</u>
As at December 31	<u><u>659,261</u></u>	<u><u>714,857</u></u>

As at December 31, 2019, the Group has derecognized notes receivable that have been discounted or endorsed but not yet due carrying amount in aggregate of RMB34,506 million (December 31, 2018: RMB29,273 million). In addition, as at December 31, 2019, the Group has not derecognized notes receivable that have been discounted or endorsed but not yet due with a carrying amount of RMB357 million (December 31, 2018: RMB444 million).

The derecognized notes receivable had a maturity of one to six months at the end of the reporting period. In accordance with the Law of Negotiable Instruments in the PRC, the holders of the derecognized notes receivable have a right of recourse against the Group if the PRC banks default (the "Continuing Involvement"). In the opinion of the directors, the Group has transferred substantially all risks and rewards relating to the derecognized notes receivable. Accordingly, it has derecognized the full carrying amounts of the derecognized notes receivable and the associated trade payables. The maximum exposure to loss from the Group's Continuing Involvement in the derecognized notes receivable and the undiscounted cash flows to repurchase these derecognized notes receivable is equal to their carrying amounts. In the opinion of the directors, the fair values of the Group's Continuing Involvement in the derecognized notes receivable are not significant.

During the year ended December 31, 2019, the Group has not recognized any gain or loss on the date of transfer of the derecognized notes receivable. No gains or losses were recognized from the Continuing Involvement, both during the year or cumulatively. The endorsement has been made evenly throughout the year.

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14. OTHER CURRENT ASSETS

	December 31, 2018	December 31, 2019
Financial assets		
- Deposits paid to suppliers	317,946	501,918
- Dividends receivable	47,167	82,796
- Receivables from disposal of businesses and assets	134,789	90,399
- Entrusted loans and loans receivable from third parties	1,645,205	1,544,070
- Entrusted loans and loans receivable from related parties	1,297,892	1,309,095
- Receivables from disposal of properties	1,881,513	1,948,434
- Interest receivables	40,936	40,936
- Recoverable reimbursement for freight charges	415,232	223,884
- Receivable of governments grants	129,977	517,365
- Other financial assets	787,396	1,185,466
	<u>6,698,053</u>	<u>7,444,363</u>
Less: impairment allowance	(1,764,068)	(1,720,439)
	<u>4,933,985</u>	<u>5,723,924</u>
Advances to employees	23,744	17,207
Deductible input value added tax receivables	2,189,470	2,424,004
Prepaid income tax	162,103	93,093
Prepayments to related parties for purchases	586,312	229,324
Prepayments to suppliers for purchases and others	964,158	634,548
Others	169,881	117,678
	<u>4,095,668</u>	<u>3,515,854</u>
Less: provision for impairment	(4,139)	(2,715)
	<u>4,091,529</u>	<u>3,513,139</u>
Total other current assets	<u>9,025,514</u>	<u>9,237,063</u>

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14. OTHER CURRENT ASSETS (CONTINUED)

As at December 31, 2019, except for amounts included in other receivables amounting to RMB37 million, which were denominated in USD (December 31, 2018: other receivables amounting to RMB48 million denominated in USD), remaining amounts in other current assets were denominated in RMB0.12 million (December 31, 2018: remaining denominated in RMB).

As at December 31, 2019, except for entrusted loans and loans receivable (December 31, 2018: except for entrusted loans and loans receivable) which were interest-bearing assets, all amounts in other current assets were non-interest-bearing (December 31, 2018: all non-interest-bearing).

As at December 31, 2019, the ageing analysis of financial assets included in other current assets was as follows:

	December 31, 2018	December 31, 2019
Within 1 year	1,456,520	1,628,723
Between 1 and 2 years	283,844	752,731
Between 2 and 3 years	844,262	151,974
Over 3 years	4,113,427	4,910,935
	<u>6,698,053</u>	<u>7,444,363</u>
Less: provision for impairment	<u>(1,764,068)</u>	<u>(1,720,439)</u>
	<u>4,933,985</u>	<u>5,723,924</u>

Movements in the provision for impairment of other current assets are as follows:

	2018	2019
As at January 1	1,677,277	1,768,207
Effect of adoption of IFRS 9	38,502	—
At beginning of year	<u>1,715,779</u>	<u>1,768,207</u>
Impairment loss	65,494	42,898
Write off	(6,117)	(62,319)
Reversal	(1,731)	(26,290)
Others	<u>(5,218)</u>	<u>658</u>
As at December 31	<u>1,768,207</u>	<u>1,723,154</u>

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14. OTHER CURRENT ASSETS (CONTINUED)

Impairment under IFRS 9 for the year ended December 31, 2018 and 2019

Financial assets included in other current assets at amortized cost are subject to impairment under the general approach and they are classified within the following stages for measurement of ECLs.

As at December 31, 2018	Gross carrying amount	Expected credit losses
Stage 1 – 12 months expected credit loss	1,098,455	—
Stage 2 – life time expected credit loss	3,744,612	88,974
Stage 3 – life time expected credit loss with credit-impaired	1,796,526	1,675,094
	<u>6,639,593</u>	<u>1,764,068</u>
As at December 31, 2019	Gross carrying amount	Expected credit losses
Stage 1 – 12 months expected credit loss	1,632,766	—
Stage 2 – life time expected credit loss	4,052,681	82,061
Stage 3 – life time expected credit loss with credit impaired	1,758,916	1,638,378
	<u>7,444,363</u>	<u>1,720,439</u>

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15. CASH AND CASH EQUIVALENTS AND RESTRICTED CASH

	December 31, 2018	December 31, 2019
Restricted cash	2,165,288	1,305,781
Cash and cash equivalents	19,130,835	7,759,190
	<u>21,296,123</u>	<u>9,064,971</u>

Restricted cash mainly represented deposits held for use in issued notes payable and letters of credit.

As at December 31, 2019, bank balances and cash on hand of the Group were denominated in the following currencies:

	December 31, 2018	December 31, 2019
RMB	18,026,265	7,858,867
USD	3,256,625	1,195,720
HKD	8,321	4,423
EUR	371	1,943
AUD	2,552	—
IDR	1,989	4,018
	<u>21,296,123</u>	<u>9,064,971</u>

Cash at banks earns interest at floating rates based on daily bank deposit rates. The bank balances, time deposits and restricted cash are deposited with creditworthy banks with no recent history of default.

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16. SHARE CAPITAL

As at December 31, 2018 and 2019, all issued shares were registered and fully paid. Both A shares and H shares rank pari passu with each other.

On January 31, 2018, the Company and eight investors, including Huarong Ruitong Equity Investment Management Co., Ltd. (華融瑞通股權投資管理有限公司), China Life Insurance Co., Ltd. (中國人壽保險股份有限公司), Shenzhen Zhao Ping Aluminum Investment Center (limited partnership) (深圳市招平中鋁投資有限(有限合夥)), China Pacific Life Insurance Co., Ltd. (中國太平洋人壽保險股份有限公司), China Cinda Asset Management Co., Ltd. (中國信達資產管理股份有限公司), BOC Financial Asset Investment Co, Ltd. (中銀金融資產投資有限公司), ICBC Financial Asset Investment Co., Ltd. (工銀金融資產投資有限公司) and ABC Financial Asset Investment Co., Ltd.(農銀金融資產投資有限公司) (collectively called “Transferors”) entered into the equity acquisition agreements, pursuant to which, the Company agreed to acquire and the Transferors agreed to sell their non-controlling equity interests in Chalco Shandong Co., Ltd., Chalco Zhongzhou Aluminum Co., Ltd., Baotou Aluminum Co., Ltd. and Chalco Mining Co., Ltd. (collectively called the “Target Companies”), at a consideration of approximately 2.1 billion ordinary shares of the Company, which was determined at the fair value of the non-controlling interests in the Target Companies of approximately RMB12.7 billion. Upon signing the equity acquisition agreements, together with the investment agreements and debt to equity swap agreements signed in 2017, the Transferors effectively surrendered their non-controlling interests in the Target Companies, which included the rights to profit or loss, voting rights and other shareholder rights of the Target Companies to the Group. Consequently the carrying values of the Transferors’ non-controlling interests in the Target Companies of RMB10.7 billion were derecognized, and were transferred to the capital reserve of the Group in 2018.

On February 25, 2019, the Company completed the issuance of ordinary shares to these Transferors, and the total number of shares issued was 2,118,874,715.

The number of the Company’s authorized ordinary shares authorized, issued and outstanding was 14,903,798,236, 14,903,798,236 and 17,022,672,951 at par value of RMB1.00 per share as at December 31, 2017, 2018, and 2019 respectively.

17. RESERVES

The amounts of the Group’s reserves and the movements therein for the current and prior years are presented in the consolidated statement of changes in equity of the financial statements.

ALUMINUM CORPORATION OF CHINA LIMITED
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18. INTEREST-BEARING LOANS AND BORROWINGS

	December 31, 2018	December 31, 2019
Long-term loans and borrowings		
Finance lease payables (Note 20)	4,081,270	—
Lease liabilities (Note 19)	—	8,369,262
Bank and other loans (Note (a))		
— Secured (Note (f))	12,608,727	13,254,721
— Guaranteed (Note (e))	3,040,400	3,948,400
— Unsecured	30,491,613	21,632,766
	46,140,740	38,835,887
Medium-term notes and bonds and long-term bonds and private placement notes (Note (b))		
— Unsecured	10,094,861	16,736,755
Total long-term loans and borrowings	60,316,871	63,941,904
Current portion of lease liabilities (Note 19)	—	(1,358,654)
Current portion of finance lease payables (Note 20)	(2,328,358)	—
Current portion of medium-term bonds and long-term bonds	(396,727)	—
Current portion of long-term bank and other loans	(3,384,400)	(3,339,687)
Non-current portion of long-term loans and borrowings	54,207,386	59,243,563

ALUMINUM CORPORATION OF CHINA LIMITED
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18. INTEREST-BEARING LOANS AND BORROWINGS (CONTINUED)

	December 31, 2018	December 31, 2019
Short-term loans and borrowings		
Bank and other loans (Note (e))		
— Secured (Note (f))	1,220,680	465,000
— Guaranteed (Note (e))	240,000	—
— Unsecured*	37,887,420	20,773,166
	<u>39,348,100</u>	<u>21,238,166</u>
Short-term bonds, unsecured (Note (d))	500,000	9,331,488
Gold leasing arrangements (Note (g))	1,607,905	7,018,609
Current portion of lease liabilities (Note 19)	—	1,358,654
Current portion of finance lease payables (Note 20)	2,328,358	—
Current portion of medium-term notes	396,727	—
Current portion of long-term bank and other loans	3,384,400	3,339,687
	<u>47,565,490</u>	<u>42,286,604</u>
Total short-term borrowings and current portion of long-term loans and borrowings		

As at December 31, 2019, except for loans and borrowings of the Group amounting to RMB17 million (December 31, 2018: RMB19 million) and RMB4,006 million (December 31, 2018: RMB3,984 million), which were denominated in JPY and USD, respectively, all loans and borrowings were denominated in RMB.

As at December 31, 2019, included in the Group's interest-bearing loans and borrowings are amounts due to subsidiaries of Chinalco (including lease liabilities) RMB9,867 million (December 31, 2018: RMB4,373 million), respectively, as set out in Note 35(b). There were no interest-bearing loans and borrowings obtained from joint ventures and associates (December 31, 2018: Nil).

* As at December 31, 2019, Shandong Huayu Alloy Materials Co., Ltd. ("Shandong Huayu"), a subsidiary of the Group, has overdue short-term loans of RMB649 million. Since overdue on its bank debts, Shandong Huayu actively communicated with relevant bank creditors, participated in relevant litigation process in accordance with law, and coordinated the repayments of its debts with its own assets, and sought the understanding and support of relevant bank creditors. As of the date of approval of the report, Shandong Huayu's default on debts did not lead to a renegotiation of debt terms.

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18. INTEREST-BEARING LOANS AND BORROWINGS (CONTINUED)

Note:

(a) Long-term bank and other loans

(i) The maturity of long-term bank and other loans is set out below:

	Loans from banks and other financial institutions		Other loans		Total of long-term bank and other loans	
	December 31, 2018	December 31, 2019	December 31, 2018	December 31, 2019	December 31, 2018	December 31, 2019
Within 1 year	3,382,325	3,337,202	2,075	2,485	3,384,400	3,339,687
Between 1 and 2 years	7,375,557	7,523,290	2,399	2,485	7,377,956	7,525,775
Between 2 and 5 years	16,586,390	9,151,573	7,197	7,455	16,593,587	9,159,028
Over 5 years	18,777,275	18,806,428	7,522	4,969	18,784,797	18,811,397
	<u>46,121,547</u>	<u>38,818,493</u>	<u>19,193</u>	<u>17,394</u>	<u>46,140,740</u>	<u>38,835,887</u>

(ii) Other loans were provided by local bureaus of the Ministry of Finance to the Group. The weighted average annual interest rate of long-term bank and other loans for the year ended December 31, 2019 was 5.20% (2018: 4.78%).

(b) Medium-term notes and bonds and long-term bonds and private placement notes

Outstanding medium-term bonds & private placement notes of the Group as at December 31, 2019 are summarized as follows:

	Face value/maturity	Effective interest rate	December 31, 2018	December 31, 2019
2018 Medium-term notes	2,000,000/2021	5.84%	1,986,418	1,992,339
2019 Medium-term bonds	2,000,000/2024	4.31%	—	1,982,228
2016 private placement notes	3,215,000/2019	5.12%	396,727	—
2018 Medium-term bonds	1,100,000/2021	4.66%	1,097,003	1,098,218
2018 Medium-term bonds	900,000/2023	5.06%	897,820	898,315
2018 Medium-term bonds	1,400,000/2021	4.30%	1,395,970	1,397,319
2018 Medium-term bonds	1,600,000/2023	4.57%	1,595,311	1,596,192
2019 Medium-term bonds	2,000,000/2022	3.84%	—	1,998,604
2019 Medium-term bonds	1,000,000/2022	3.50%	—	1,997,097
2019 Medium-term bonds	900,000/2023	4.99%	—	999,462
2018 Hong Kong Medium-term bonds	2,785,840/2021	5.25%	2,725,612	2,776,981
			<u>10,094,861</u>	<u>16,736,755</u>

Medium-term notes and bonds and private placement notes were issued for capital expenditure and operating cash flows purposes, as well as for the purpose of re-financing of bank loans.

ALUMINUM CORPORATION OF CHINA LIMITED
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18. INTEREST-BEARING LOANS AND BORROWINGS (CONTINUED)

Note: (Continued)

(c) Short-term bank and other loans

Other loans were entrusted loans provided by state-owned companies to the Group.

The weighted average annual interest rate of short-term bank and other loans for the year ended December 31, 2019 was 4.29% (2018: 4.52%).

(d) Short-term bonds

Outstanding short-term bonds as at December 31, 2019 are summarized as follows:

	Face value /maturity	Effective interest rate	December 31, 2018	December 31, 2019
2018 Ningxia short-term bonds	500,000/2019	5.00%	500,000	—
2019 Ningxia short-term bonds	300,000/2020	3.97%	—	300,000
2019 short-term bonds	1,000,000/2020	2.45%	—	1,008,161
2019 short-term bonds	2,000,000/2020	2.63%	—	2,013,127
2019 short-term bonds	3,000,000/2020	2.00%	—	3,008,384
2019 short-term bonds	3,000,000/2020	2.30%	—	3,001,816
			500,000	9,331,488

All the above short-term bonds were issued for working capital needs.

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18. INTEREST-BEARING LOANS AND BORROWINGS (CONTINUED)

Note: (Continued)

(e) Guaranteed interest-bearing loans and borrowings

Details of the interest-bearing loans and borrowings in which the Group received guarantees are set out as follows:

Guarantors	December 31, 2018	December 31, 2019
Long-term loans		
Yinyi Fengdian, Neimenggu, Alashan (Note (iv))	—	150,000
Ningxia Energy (Note (i))	892,400	1,274,400
Yinxing Energy (Note (i))	70,000	46,000
Baotou Aluminum Limited Company*(包頭鋁業有限公司) and Baotou Communications Investment Group Limited Company*(包頭交通投資集團有限公司) (Note (ii))	1,600,000	1,250,000
The Company and Hangzhou Jinjiang Group Limited Company (“Hangzhou Jinjiang”, 杭州錦江集團有限公司) (Note (iii))	246,000	10,000
Hangzhou Jinjiang (Note (v))	—	123,500
Qingzhen Industrial Investment Co., Ltd.*(“Qingzhen Investment”) (清鎮市工業投資有限公司) (Note (v))	116,000	47,250
Guizhou Industrial Investment Group Co., Ltd.*(“Guizhou Investment”) (貴州產業投資(集團)有限責任公司) (Note (v))	116,000	47,250
Size Industry Investment Fund (北京中鋁交銀四則產業投資基金管理合夥企業(有限合夥)) (Note (v))	—	1,000,000
	<u>3,040,400</u>	<u>3,948,400</u>
Short-term loans		
China Great Wall Aluminum Co., Ltd.*(“China Great Wall Aluminum”) (中國長城鋁業有限公司) (Note (vi))	40,000	—
Hangzhou Jinjiang, Qingzhen Investment and Guizhou Investment (Note (v))	200,000	—
	<u>240,000</u>	<u>—</u>

Note:

- (i) The guarantor is a subsidiary of the Company.
- (ii) The guarantors are a subsidiary of the Company and a third party respectively.
- (iii) The guarantors are the Company and a third party respectively.
- (iv) The guarantors are subsidiaries of the Company.
- (v) The guarantor is a third party.
- (vi) The guarantor is a subsidiary of Chinalco.

* The English names represent the best effort by management of the Group in translating the Chinese names of the Companies as they do not have any official English names.

(f) Secured interest-bearing loans and borrowings

The assets pledged for bank and other borrowings were set out in Note 24 to the financial statements.

ALUMINUM CORPORATION OF CHINA LIMITED
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18. INTEREST-BEARING LOANS AND BORROWINGS (CONTINUED)

Note: (Continued)

(g) Gold leasing arrangements

In 2018 and 2019, the Company entered into several gold leasing master framework agreements, individual gold leasing agreements and general hedging agreements with Bank of Communications and Agriculture Bank of China (collectively, "the Banks"). According to the gold leasing master framework agreements and gold leasing agreements, the Company leased standard gold with fineness of Au 99.99 for 6 to 12 months from the Banks, with annual interest rates ranging from 3.70% to 4.50%. Concurrently, the Company entrusted the Banks to sell all leased gold and received cash of RMB6,922 million from the sale, and repaid gold leasing principal amounting to RMB1,608 million. Upon the expiry of the gold leasing agreements, the Company shall purchase the standard gold (with same quality and value according to the general hedging agreements entered into simultaneously with the leasing agreements) to return to the Banks.

The directors of the Company are of the view that the Company is free from the assumption of risk of gold price fluctuations due to the fixed repurchase price under the general hedging agreements, and therefore, this arrangement should be accounted for as short-term loans with fixed interest rates (ranging from 3.70% to 4.50%) (2018: ranging from 4.10% to 4.50%), net of the Banks' charges.

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19. LEASE

The Group as a lessee

The Group has lease contracts for various items of plant and machinery, motor vehicles and other equipment used in its operations. Lump sum payments were made upfront to acquire the leased land from the owners with lease periods of 20 to 30 years, and no ongoing payments will be made under the terms of these land leases. Leases of plant and machinery generally have lease terms between 3 and 5 years, while motor vehicles generally have lease terms between 2 and 5 years. Other equipment generally has lease terms of 12 months or less and/or is individually of low value. Generally, the Group is restricted from assigning and subleasing the leased assets outside the Group. There are several lease contracts that include extension and termination options and variable lease payments, which are further discussed below.

(a) Land use rights (before January 1, 2019)

	December 31, 2018
<hr/>	
Operating leases:	
In the Mainland China, held on:	
Leases less than 10 years	768,153
Leases between 10 and 50 years	2,753,882
Leases over 50 years	<u>784,830</u>
	<u>4,306,865</u>
	2018
<hr/>	
As at January 1,	3,604,201
Additions	2,838
Acquisition of subsidiaries	460,638
Transfer from property, plant and equipment (Note 6)	382,242
Government grants	(34,174)
Disposal of subsidiaries	(728)
Amortization	<u>(108,152)</u>
As at December 31,	<u>4,306,865</u>

As at December 31, 2018, the Group has pledged land use rights at a net carrying value amounting to RMB328 million for bank and other borrowings as set out in Note 24 to the financial statements.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

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19. LEASE (CONTINUED)

The Group as a lessee (Continued)

(b) Right-of-use assets

The carrying amounts of the Group's right-of-use assets and the movements during the year are as follows:

	Buildings	Machinery	Land use rights	Total
As at January 1, 2019	396,499	6,129,771	11,450,581	17,976,851
Additions	21,203	11,606	1,215,049	1,247,858
Transfer to investment properties (Note 7)	—	—	(239,765)	(239,765)
Transfer to property, plant and equipment (Note 6)	—	(1,674,260)	—	(1,674,260)
Government grants	—	(107,441)	—	(107,441)
Contract modification	(45,507)	—	(137,358)	(182,865)
Disposal of subsidiaries	—	—	(52,668)	(52,668)
Depreciation	(84,940)	(601,891)	(388,994)	(1,075,825)
Impairment losses	—	—	(1,448)	(1,448)
As at December 31, 2019	<u>287,255</u>	<u>3,757,785</u>	<u>11,845,397</u>	<u>15,890,437</u>

As at December 31, 2019, the Group was in the process of applying for the certificates of land use rights with a carrying amount of RMB74 million (December 31, 2018: RMB687 million). There has been no litigations, claims or assessments against the Group for compensation with respect to the use of land parcels to date. As at December 31, 2019, the carrying value of these land parcels only represented approximately 0.04% of the total asset value of the Group (December 31, 2018: 0.34%). Management considers that it is probable that the Group can obtain the relevant ownership certificates from the appropriate authorities. The directors of the Company are of the opinion that the Group legally owns and has the right to use the above land, and that there is no material adverse impact on the overall financial position of the Group.

As at December 31, 2019, the Group has pledged land use rights at a net carrying value amounting to RMB373 million for bank and other borrowings as set out in Note 24 to the financial statements.

ALUMINUM CORPORATION OF CHINA LIMITED
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19. LEASE (CONTINUED)

The Group as a lessee (Continued)

(c) Lease liabilities

The carrying amount of lease liabilities (included under interest-bearing bank and other borrowings) and the movements during the year are as follows:

	2019
	Lease liabilities
Carrying amount at January 1,	11,010,323
New leases	82,370
Contract modification	(178,575)
Accretion of interest recognized during the year	487,250
Payments	<u>(3,032,106)</u>
Carrying amount at December 31,	<u>8,369,262</u>
Analyzed into:	
Current portion	1,358,654
Non-current portion	7,010,608

(d) The amounts recognized in profit or loss in relation to leases are as follows:

	2019
Interest on lease liabilities	487,249
Depreciation charge of right-of-use assets	1,075,825
Expense relating to short-term leases and other leases with remaining lease terms ended on or before December 31, 2019	63,626
Expense relating to leases of low-value assets	<u>1,800</u>
Total amount recognized in profit or loss	<u>1,628,500</u>

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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19. LEASE (CONTINUED)

The Group as a lessee (Continued)

(e) Extension and termination options

The Group has several lease contracts that include extension and termination options. These options are negotiated by management to provide flexibility in managing the leased-asset portfolio and align with the Group's business needs. Management exercises significant judgement in determining whether these extension and termination options are reasonably certain to be exercised. Set out below are the undiscounted potential future rental payments relating to periods following the exercise date of extension and termination options that are not included in the lease terms:

	Payable within five years	Payable after five year
Extension options expected not to be exercised	—	—
Termination options expected to be exercised	—	—

(f) The total cash outflow for leases and future cash outflows relating to leases that have not yet commenced are disclosed in Notes 34(c) and 42, respectively, to the financial statements

The Group as a lessor

Rental income recognized by the Group during the year was RMB318 million (2017: RMB153 million, 2018: RMB240 million), details of which are included in Note 4 to the financial statements. In the opinions of the directors, the undiscounted lease payments receivable by the Group in future periods under non-cancellable operating leases is not material.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

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20. FINANCE LEASE PAYABLES

These leases were classified as finance leases prior to IFRS 16 becoming effective on January 1, 2019.

At December 31, 2018, the total future minimum lease payments under finance leases and their present values were as follows:

	Minimum lease payments	Present value of minimum lease payments
	December 31, 2018	December 31, 2018
Amounts payable:		
Within one year	2,518,653	2,328,358
In the second year	1,161,490	1,075,050
In the third to fifth years, inclusive	707,716	664,889
After five years	13,238	12,973
Total minimum finance lease payments	4,401,097	4,081,270
Future finance charges	(319,827)	
Total net finance lease payables (Note 18)	4,081,270	
Portion classified as current liabilities (Note 18)	(2,328,358)	
Non-current portion	1,752,912	

During the year ended December 31, 2018, the Group entered into various sale and leaseback agreements with Pingan International Financial Leasing Co., Ltd. (平安國際融資租賃有限公司), Tianjin Far East Hongxin Finance Leasing Co., Ltd. (“遠東宏信(天津) 融資租賃有限公司”), China Aviation International Leasing Co., Ltd. (“中航國際租賃有限公司”), Zhaoyin Leasing Co., Ltd. (“招銀租賃有限公司”) and Chalco Financial Leasing Co., Ltd.* (“中鋁融資租賃有限公司”), which is a related party of the Group, respectively, under which the Group sold machineries and construction in progress and leased them back. The lease terms range from one to six years and the lease rentals are payable by installments which bear interest at prevailing lending rates.

* The English names represent the best effort made by the management of the Group in translating the Chinese name of the companies as they do not have any official English names.

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21. OTHER NON-CURRENT LIABILITIES

	December 31, 2018	December 31, 2019
Financial liabilities		
- Long-term payables for mining rights	788,133	1,108,075
- Other financial liabilities	52,926	45,412
	<u>841,059</u>	<u>1,153,487</u>
Obligations in relation to early retirement schemes (Note (i))	777,305	426,737
Deferred government grants (Note (ii))	314,045	245,916
Deferred gain relating to sales and leaseback agreements	240,661	125,707
Contract liabilities	132,844	125,758
Provision for rehabilitation	121,033	131,248
Others	11,217	10,721
	<u>1,597,105</u>	<u>1,066,087</u>
	<u>2,438,164</u>	<u>2,219,574</u>

ALUMINUM CORPORATION OF CHINA LIMITED
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21. OTHER NON-CURRENT LIABILITIES (CONTINUED)

Note:

(i) Obligations in relation to early retirement schemes

From 2014, certain subsidiaries and branches implemented certain early retirement benefit schemes which allow qualified employees to early retire on a voluntary basis. The Group undertakes the obligations to pay the early retirement employees' living expenses for no more than five years in the future on a monthly basis according to the early retirement benefit schemes, together with social insurance and housing fund pursuant to the regulation of the local Social Security Office. Living expenses, social insurance and the housing fund are together referred to as "the Payments". The Payments are forecasted to increase by 3% per annum with reference to the inflation rate and adjusted based on the average death rate in China. The Payments are discounted by the treasury bond rate of December 31, 2019. As at December 31, 2019, the current portion of the Payments within one year was reclassified to "Other payables and accrued liabilities".

As at December 31, 2019, obligations in relation to retirement benefits under the Group's early retirement schemes are as follows:

	2018	2019
As at January 1,	1,438,440	1,293,841
Provision made during the year (Note 29)	447,660	210,428
Interest costs	62,801	18,260
Payment during the year	(655,060)	(680,888)
As at December 31,	<u>1,293,841</u>	<u>841,641</u>
Non-current	777,305	426,737
Current (Note 22)	<u>516,536</u>	<u>414,904</u>
	<u>1,293,841</u>	<u>841,641</u>

- (ii) For asset related government grant, had the asset already exist upon receiving the government grant, the Group directly deducts the grant amount against the book value of assets related to government grant instead of record the government grants as deferred income. For government grant related to income and expenses or losses already incurred by the Group, the government grant amounts are directly deducted the related costs, expenses or non-operating losses. Other types of government grant in the Group are still included in deferred government grant and other income.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)
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22. OTHER PAYABLES AND ACCRUED LIABILITIES

	December 31, 2018	December 31, 2019
Financial liabilities		
- Payable for capital expenditures	5,694,632	6,832,365
- Accrued interest	396,286	494,341
- Payables withheld as guarantees and deposits	1,102,358	1,339,722
- Dividends payable by subsidiaries to non-controlling shareholders	543,207	518,360
- Consideration payable for investment projects	280,856	141,740
- Current portion of payables for mining rights	210,325	372,824
- Others	1,058,798	1,083,646
	<u>9,286,462</u>	<u>10,782,998</u>
Taxes other than income taxes payable*	831,151	732,264
Accrued payroll and bonus	220,851	21,902
Staff welfare payables	391,824	258,448
Current portion of obligations in relation to early retirement schemes (Note 21)	516,536	414,904
Contribution payable for pension insurance	30,145	20,386
Output value-added tax on pending	252,691	210,283
Others	37,492	999
	<u>2,280,690</u>	<u>1,659,186</u>
	<u>11,567,152</u>	<u>12,442,184</u>

* Taxes other than income taxes payable mainly comprise accruals for value-added tax, resource tax, city construction tax and education surcharge.

As at December 31, 2019, except for other payables and accrued liabilities of the Group amounting to RMB825 million and RMB0.25 million, which were denominated in USD and HKD, respectively (December 31, 2018: RMB240 million and RMB0.27 million which were denominated in USD and HKD respectively), all payables and accrued liabilities were denominated in RMB.

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23. TRADE AND NOTES PAYABLES

	December 31, 2018	December 31, 2019
Trade payables	8,570,102	7,858,214
Notes payable	5,439,162	4,726,541
	<u>14,009,264</u>	<u>12,584,755</u>

As at December 31, 2019, except for trade and notes payables of the Group amounting to RMB52 million (December 31, 2018: RMB213 million) which were denominated in USD, all trade and notes payables were denominated in RMB.

The ageing analysis of trade and notes payables is as follows:

	December 31, 2018	December 31, 2019
Within 1 year	13,598,039	12,145,985
Between 1 and 2 years	140,665	229,221
Between 2 and 3 years	47,654	30,713
Over 3 years	222,906	178,836
	<u>14,009,264</u>	<u>12,584,755</u>

The trade and notes payables are non-interest-bearing and are normally settled within one year.

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24. PLEDGE OF ASSETS

The Group has pledged various assets as collateral against certain secured borrowings as set out in Note 18. As at December 31, 2018, a summary of these pledged assets was as follows:

	December 31, 2018	December 31, 2019
Property, plant and equipment (Note 6)	4,168,239	4,946,338
Land use rights (Note 19)	328,116	—
Right-of-use assets (Note 19)	—	373,048
Intangible assets (Note 5)	772,597	757,269
Notes receivable (Note 13)	933,551	667,190
Investments in associates (Note 8)	535,610	538,787
	<u>6,738,113</u>	<u>7,282,632</u>

As at December 31, 2019, in addition to the loans and borrowings which were secured by the above assets, the current portion of long-term loans and borrowings amounting to RMB1,209 million (December 31, 2018: RMB1,354 million), and the non-current portion of long-term loans and borrowings amounting to RMB10,265 million (December 31, 2018: RMB10,155 million) were secured by the contractual right to charge users for electricity generated in the future.

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25. PROFIT BEFORE INCOME TAX

An analysis of profit before income tax is as follows:

	2017	2018	2019
Purchase of inventories in relation to trading activities	98,282,748	85,443,397	104,928,962
Raw materials and consumables used, and changes in work-in-progress and finished goods	34,550,042	43,197,855	35,573,467
Power and utilities	17,274,948	17,650,214	16,755,424
Depreciation of right-of-use assets	—	—	1,075,825
Depreciation and amortization (Other than depreciation of right-of-use assets)	7,064,747	8,055,753	7,714,418
Employee benefit expenses (Note 29)	6,975,281	7,433,027	7,773,170
Repairs and maintenance	1,716,940	1,750,194	1,867,160
Transportation expenses	1,768,604	1,893,659	950,716
Logistic cost	1,894,061	2,794,733	2,469,531
Taxes other than income tax expense (Note (i))	858,344	936,546	904,088
Rental expenses for land use rights and buildings	497,356	649,640	—
Packaging expenses	267,547	261,626	277,785
Research and development expenses	498,234	626,873	940,828
Auditors' remuneration expense (Note (ii))	31,815	30,852	33,337

Note:

- (i) Taxes other than income tax expense mainly comprise surcharges, land use tax, property tax and stamp duties.
- (ii) During the year ended December 31, 2019, auditors' remuneration included audit and non-audit services provided by Ernst & Young, Ernst & Young Hua Ming LLP, and Ernst & Young (China) Advisory Limited, amounting to RMB27.8 million (2017: RMB23.1 million, 2018: RMB26.7 million), and services provided by other auditors.

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26. OTHER INCOME

For the year ended December 31, 2019, government grants amounting to RMB79 million (2017: RMB90 million, 2018: RMB135 million) were recognized as income for the year to facilitate the Group's development. There are no unfulfilled conditions or contingencies attached to the grants.

27. OTHER GAINS, NET

	2017	2018	2019
Gain on disposal of subsidiaries (Note 39)	325,022	3,517	261,187
Gain on disposal and dividends of equity investments designated at fair value through other comprehensive income (Note 1))	79,408	109,914	97,775
Realized (losses)/gains on futures, forward and option contracts, net (Note 2))	(23,951)	40,492	60,671
Unrealized (losses)/gains on futures, forward and option contracts, net (Note 2))	(131,073)	100,967	(9,851)
Gain on disposal of property, plant and equipment and land use rights, net (Note 3))	76,739	272,098	259,684
Gain on previously held equity interests remeasured at acquisition-date fair value	117,640	748,086	—
Gain on share of associates' net assets (Note 8(b)), (Note 4))	—	—	295,288
(Loss)/gain on disposal of investment in a joint venture/an associate (Note 5))	—	(1,904)	159,514
Gain on disposal of business (Note 6))	—	—	262,677
Others	(124,383)	(351,266)	(139,676)
	<u>319,402</u>	<u>921,904</u>	<u>1,247,269</u>

Notes:

- (1) In 2019, the dividends of other equity instrument investments were mainly RMB98 million from Size Industry Investment Fund (2017: RMB79 million, 2018: RMB109 million).
- (2) The Group does not apply hedge accounting for these futures, forward and option contracts.

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27. OTHER GAINS, NET (CONTINUED)

Notes: (Continued)

- (3) During the year, the transactions contributed to the gain on disposal of electrolytic aluminum capacity quota and property, plant and equipment mainly include the following:
 - (a) Pursuant to the agreement entered into between Shanxi Huasheng Co., Ltd. (“Shanxi Huasheng”) and Yixin Aluminum on May 28, 2019, the electrolytic aluminum capacity quota of 170,000 tonnes was transferred from Shanxi Huasheng to Yixin Aluminum. A gain of RMB800 million from disposal of the aluminum capacity quota was recorded by the Group in the current period. The transfer constitutes a related party transaction which was disclosed in Note 35 (a).
 - (b) The fixed assets related to the electrolytic aluminum production line of Guizhou Branch have been disposed of, and the Company recognized the disposal loss of RMB541 million from the difference between the transfer price and carrying amount of the assets.
 - (4) As disclosed in Note 8 (b), the Group recognized a gain of RMB204 million and a gain of RMB91 million on barging purchase of associates Yunnan Aluminum and Yixin Aluminum, respectively.
 - (5) In March 2019, Ningxia Energy transferred, through an auction transaction, its 50% equity interest in Ningxia Zhongning Power Co., Ltd. to Ningxia Tianyuan Manganese Industry Group Co., Ltd. A gain of RMB159 million from disposal of investment in a joint venture was recorded by the Group in the current year.
 - (6) The Company used gallium metal business to increase its investment to an associate China Rare Earth Co., Ltd. (“China Rare Earth”), and recognized a gain of RMB263 million.
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28. FINANCE INCOME/FINANCE COSTS

An analysis of finance income/finance costs is as follows:

	2017	2018	2019
Finance income - interest income	(706,690)	(492,234)	(261,151)
Interest expense	5,175,154	5,202,639	4,665,329
Less: interest expense capitalized in property, plant and equipment (Note 6)	(344,452)	(517,589)	(289,499)
Interest expense, net of capitalized interest	4,830,702	4,685,050	4,375,830
Interest on lease liabilities	—	—	487,249
Amortization of unrecognized finance expenses	241,099	205,335	60,415
Exchange (gain)/loss, net	131,621	(7,889)	(2,315)
Finance costs	5,203,422	4,882,496	4,921,179
Capitalization rate during the year (Note 6)	4.41% to 8.00%	4.54% to 7.00%	4.00% to 6.96%

29. EMPLOYEE BENEFIT EXPENSES

An analysis of employee benefit expenses is as follows:

	2017	2018	2019
Salaries and bonus	4,205,361	4,636,972	4,939,758
Housing fund	395,489	414,440	488,574
Staff welfare and other expenses *	1,576,552	1,896,365	2,035,931
Employment expense in relation to early retirement schemes (Note 21)	767,632	447,660	210,428
Employment expenses in relation to termination benefit	30,247	37,590	98,479
	<u>6,975,281</u>	<u>7,433,027</u>	<u>7,773,170</u>

* Staff welfare and other expenses include staff welfare, staff union expenses, staff education expenses, unemployment insurance expenses, pension insurance expenses, etc.

Employee benefit expenses include remuneration payables to directors, supervisors and senior management as set out in Note 30.

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30. DIRECTORS' AND SUPERVISORS' REMUNERATION

(a) Directors' and supervisors' remuneration

Directors' and supervisors' remuneration for the year, disclosed pursuant to the Listing Rules, section 383(1)(a), (b), (c) and (f) of the Hong Kong Companies Ordinance and Part 2 of the Companies Regulation (Disclosure of Information about Benefits of Directors), is as follows:

	2017	2018	2019
Fees	768	756	780
Basic salaries, housing fund, other allowances and benefits in kind	1,370	1,849	4,665
Pension cost	166	234	513
	<u>2,304</u>	<u>2,839</u>	<u>5,958</u>

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30. DIRECTORS' AND SUPERVISORS' REMUNERATION (CONTINUED)

(a) Directors' and supervisors' remuneration (Continued)

The remuneration of each director and supervisor of the Company for the year ended December 31, 2017 is set out below:

Names of directors and supervisors	Fees	Salaries	Discretionary bonuses	Pension costs	total
Executive Directors:					
Yu Dehui	—	—	—	—	—
Lu Dongliang	—	—	—	—	—
Jiang Yinggang	—	822	—	83	905
	—	822	—	83	905
Non-executive Directors:					
Ao Hong	—	—	—	—	—
Liu Caiming	—	—	—	—	—
Wang Jun	150	—	—	—	150
Chen Lijie	206	—	—	—	206
Lie-A-Cheong Tai-Chong, David	206	—	—	—	206
Hu Shihai	206	—	—	—	206
	768	—	—	—	768
Supervisors:					
Liu Xiangmin	—	—	—	—	—
Wang Jun	—	—	—	—	—
Wu Zuoming	—	548	—	83	631
	—	548	—	83	631
Total	768	1,370	—	166	2,304

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30. DIRECTORS' AND SUPERVISORS' REMUNERATION (CONTINUED)

(a) Directors' and supervisors' remuneration (Continued)

The remuneration of each director and supervisor of the Company for the year ended December 31, 2018 is set out below:

Names of directors and supervisors	Fees	Salaries	Discretionary bonuses	Pension costs	total
Executive Directors:					
Yu Dehui (Note (i))	—	—	—	—	—
Lu Dongliang (Note (i))	—	—	—	—	—
Jiang Yinggang	—	762	—	90	852
Zhu Runzhou	—	438	—	54	492
	—	1,200	—	144	1,344
Non-executive Directors:					
Ao Hong	—	—	—	—	—
Liu Caiming	—	—	—	—	—
Wang Jun	150	—	—	—	150
Chen Lijie	202	—	—	—	202
Lie-A-Cheong Tai-Chong, David	202	—	—	—	202
Hu Shihai	202	—	—	—	202
	756	—	—	—	756
Supervisors:					
Liu Xiangmin	—	—	—	—	—
Wang Jun	—	—	—	—	—
Wu Zuoming	—	649	—	90	739
	—	649	—	90	739
Total	756	1,849	—	234	2,839

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30. DIRECTORS' AND SUPERVISORS' REMUNERATION (CONTINUED)

(a) Directors' and supervisors' remuneration (Continued)

The remuneration of each director and supervisor of the Company for the year ended December 31, 2019 is set out below:

Names of directors and supervisors	Fees	Salaries	Discretionary bonuses	Pension costs	total
Executive Directors:					
Yu Dehui (Note (i))	—	—	—	—	—
Lu Dongliang (Note (i))	—	—	—	—	—
He Zhihui	—	885	—	73	958
Zhu Runzhou	—	833	—	88	921
Jiang Yinggang	—	889	—	88	977
	—	2,607	—	249	2,856
Non-executive Directors:					
Ao Hong	—	—	—	—	—
Wang Jun (Note (ii))	150	—	—	—	150
Chen Lijie	210	—	—	—	210
Lie-A-Cheong Tai-Chong, David	210	—	—	—	210
Hu Shihai	210	—	—	—	210
	780	—	—	—	780
Supervisors:					
Ye Guohua (Note (iii))	—	—	—	—	—
Ou Xiaowu (Note (iii))	—	—	—	—	—
Shan Shulan (Note (iii))	—	—	—	—	—
Guan Xiaoguang (Note (iii))	—	710	—	88	798
Yue Xuguang (Note (iii))	—	770	—	88	858
Wu Zuoming	—	578	—	88	666
	—	2,058	—	264	2,322
Total	780	4,665	—	513	5,958

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30. DIRECTORS' AND SUPERVISORS' REMUNERATION (CONTINUED)

- (a) Directors' and supervisors' remuneration (Continued)

Note:

- (i) On February 21, 2019, Mr. Yu Dehui resigned as the chairman and an executive Director of the Company, and Mr. Lu Dongliang was elected as the chairman of the sixth session of the Board of the Company at the 39th meeting of the sixth session of the Board.
- (ii) On February 20, 2019, the appointment of Mr. Wang Jun as the chief financial officer and the Secretary to the Board (Company Secretary) of the Company was approved at the 38th meeting of the sixth session of the Board of the Company.
- (iii) On June 25, 2019, Mr. Ye Guohua was elected as the chairman of the seventh session of the Supervisory Committee of the Company at the first meeting of the seventh session of the Supervisory Committee of the Company.

On June 25, 2019, Ms. Shan Shulan were elected as the shareholder representative Supervisors of the seventh session of the Supervisory Committee of the Company at the 2018 annual general meeting of the Company.

On June 25, 2019, Mr. Guan Xiaoguang was elected as an employee representative Supervisor of the seventh session of the Supervisory Committee of the Company at the employees' representatives meeting of the Company.

On December 10, 2019, Mr. Ou Xiaowu, nominated by Chinalco, the controlling shareholder of the Company on October 24, 2019, was elected as a shareholder representative Supervisor of the seventh session of the Supervisory Committee of the Company at the 2019 third extraordinary general meeting of the Company.

On December 10, 2019, Mr. Yue Xuguang was elected as an employee representative Supervisor of the seventh session of the Supervisory Committee of the Company at the employees' representatives meeting of the Company.

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30. DIRECTORS' AND SUPERVISORS' REMUNERATION (CONTINUED)

(a) Directors' and supervisors' remuneration (Continued)

The remuneration of the directors and supervisors of the Company fell within the following band:

	Number of individuals		
	2017	2018	2019
Nil to RMB1,000,000	15	12	14

During the year, no options were granted to the directors or the supervisors of the Company (2017: Nil, 2018: Nil).

During the year, no emoluments were paid to the directors or the supervisors of the Company (among which included the five highest paid employees) as an inducement to join or upon joining the Company or as compensation for loss of office (2017: Nil, 2018: Nil).

No directors or supervisors of the Company waived any remuneration during the years 2017, 2018 and 2019.

(b) Five highest paid individuals

During the year ended December 31, 2019, the five highest paid employees of the Group include two directors and one supervisor (2017: one director and one supervisor, 2018: one director and one supervisor) whose remuneration is reflected in the analysis presented above. The remuneration payable to the remaining three individuals during 2019 (2017: three, 2018: three) is as follows:

	2017	2018	2019
Basic salaries, housing fund, other allowances and benefits in kind	2,460	1,305	1,670
Discretionary bonuses	—	—	—
Pension costs	249	165	137
	2,709	1,470	1,807

The number of the remaining two highest paid individuals during 2019 (2017: three, 2018: two) whose remuneration fell within the following band is as follows:

	Number of individuals		
	2017	2018	2019
Nil to RMB1,000,000	3	2	2

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31. INCOME TAX EXPENSE

	2017	2018	2019
Current income tax expense	844,896	755,264	720,405
Deferred tax (benefit)/expense	<u>(201,190)</u>	<u>67,255</u>	<u>(94,685)</u>
	<u>643,706</u>	<u>822,519</u>	<u>625,720</u>

In general, the Group's PRC entities are subject to PRC corporate income tax at the standard rate of 25% (2017: 25%, 2018: 25%) on their respective estimated assessable profits for the year. Certain branches and subsidiaries of the Company located in the western regions of the PRC are granted tax concessions including a preferential tax rate of 15% (2017: 15%, 2018: 15%).

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31. INCOME TAX EXPENSE (CONTINUED)

A reconciliation of the tax expense applicable to profit before tax at the statutory rates for the countries in which the Company and the majority of its subsidiaries are domiciled to the tax expense at the effective tax rates, and a reconciliation of the applicable rates to the effective tax rates are as follows:

	2017	2018	2019
Profit before income tax	3,049,175	2,264,514	2,113,801
Tax expense calculated at the statutory tax rate of 25% (2017 and 2018: 25%)	762,294	566,129	528,450
Tax effects of:			
Preferential income tax rates applicable to certain branches and subsidiaries	(287,081)	(268,665)	(464,880)
Impact of change in income tax rate	98,150	23,425	4,594
Tax losses with no deferred tax assets recognized	296,728	434,103	588,267
Deductible temporary differences with no deferred tax assets recognized	308,657	384,072	41,695
Utilization of previously unrecognized tax losses and deductible temporary differences	(212,309)	(52,962)	(17,952)
Tax incentive in relation to deduction of certain expenses	(43,846)	(62,172)	(50,921)
Non-taxable income	(126,101)	(254,337)	(173,686)
Expenses not deductible for tax purposes	49,564	54,959	56,448
Write-off of unrecoverable deferred tax assets previously recognized	49,808	183,195	187,433
Profits and losses attributable to joint ventures and associates	—	40,029	(79,720)
Recognition of deferred tax assets related to deductible temporary differences and tax losses previously not recognized	(274,726)	(233,940)	(3,868)
Adjustments in respect of current tax of previous periods	22,568	8,683	9,860
Income tax expense	643,706	822,519	625,720
Effective tax rate	21%	36%	30%

Share of income tax expense of associates and joint ventures of RMB79 million (2017: RMB86 million, 2018: RMB106 million) and RMB54 million (2017: RMB11 million, 2018: RMB 48 million) is included in “Share of profits and losses of associates” and “Share of profits and losses of joint ventures”, respectively.

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32. EARNINGS PER SHARE ATTRIBUTABLE TO ORDINARY EQUITY HOLDERS OF THE PARENT

	2017	2018	2019
Profit attributable to ordinary equity holders of the parent (RMB)	1,413,221	707,460	850,999
Other equity instruments' distribution reserved (RMB)	(110,000)	(129,282)	(219,249)
	<u>1,303,221</u>	<u>578,178</u>	<u>631,750</u>
Weighted average number of ordinary shares in issue	14,903,798,236	14,903,798,236	14,903,798,236
Effect of equity exchange arrangement	—	1,938,915,502	—
Issuance of share capital* (Note 16)	—	—	2,118,874,715
	<u>14,903,798,236</u>	<u>16,842,713,738</u>	<u>17,022,672,951</u>
Basic and diluted earnings per share (RMB)	<u>0.087</u>	<u>0.034</u>	<u>0.037</u>

* The Group had no potentially dilutive ordinary shares in issue during the years ended December 31, 2019, 2018 and 2017.

33. DIVIDENDS

According to the articles of association of the Company, the Company considers that the maximum limit of profit appropriation to its shareholders is the lowest of:

- (i) the sum of the net profit and the opening retained earnings for the current period in accordance with IFRSs;
- (ii) the sum of the net profit and the opening retained earnings for the current period in accordance with the PRC Accounting Standards for Business Enterprises; and
- (iii) the amount limited by the Company Law of the PRC.

According to the resolution of the board of directors dated March 26, 2020, the directors did not propose any final dividend for the year ended December 31, 2019, which is to be approved by the shareholders.

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34. NOTES TO THE CONSOLIDATED STATEMENT OF CASH FLOWS

(a) Reconciliation of profit before taxation to cash generated from operations

	Notes	2017	2018	2019
Cash flows generated from operating activities				
Profit before income tax		3,049,175	2,264,514	2,113,801
Adjustments for:				
Share of profits and losses of joint ventures	8(a)	(8,151)	199,452	(270,115)
Share of profits and losses of associates	8(b)	165,249	(39,335)	(48,767)
Depreciation of property, plant and equipment	6	6,554,842	7,499,322	7,094,716
Depreciation of investment properties	7	14,105	22,229	26,559
Depreciation of right-of-use assets	19	—	—	1,075,825
Gain on disposal of other property, plant and equipment and land use rights, net	27	(76,739)	(101,098)	(242,960)
Impairment losses on property, plant and equipment	6	16,200	46,484	259,354
Impairment losses of intangible assets	5	8,134	—	1,448
Amortization of intangible assets	5	275,877	295,901	338,938
Amortization of land use rights	19	91,579	108,152	—
Amortization of prepaid expenses included in other non-current assets		127,793	130,148	254,205
Realized and unrealized losses/(gains) on futures, option and forward contracts	27	155,024	(141,459)	(50,820)
Gain on previously held equity interest remeasured at acquisition-date fair value	27	(117,640)	(748,086)	—
Gain on disposals and deemed disposals of subsidiaries	27	(325,022)	(3,517)	(261,187)
Loss/(gains) on disposal of investments in associates	27	—	1,904	(159,514)
Gain on disposal of business	27	—	—	(262,677)
Gain on share of associates' net assets	27	—	—	(295,288)
Gain on disposal of and dividends from equity investments	27	(79,408)	(109,914)	(97,775)
Receipt of government subsidies		(202,359)	(158,109)	(112,141)
Interest income		(183,036)	—	—
Finance costs	28	5,204,337	4,882,496	4,921,179
Change in special reserve		58,743	6,605	(23,085)
Others		(16,951)	75,381	(11,555)
		<u>14,711,752</u>	<u>14,231,070</u>	<u>14,250,141</u>

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34. NOTES TO THE CONSOLIDATED STATEMENT OF CASH FLOWS (CONTINUED)

(a) Reconciliation of profit before taxation to cash generated from operations (Continued)

	2017	2018	2019
Cash flows generated from operating activities (Continued)			
Changes in working capital:			
Decrease/(increase) in inventories	(2,662,507)	1,194,454	929,027
Increase in trade and notes receivables	(1,963,178)	(2,473,006)	(1,050,860)
Decrease in other current assets	1,275,535	916,681	(360,639)
(Increase)/decrease in restricted cash	(137,745)	530,284	859,507
(Increase)/decrease in other non-current assets	(422,845)	425,739	547,287
(Decrease)/increase in trade and notes payables	1,600,975	(5,559)	(1,385,081)
Increase/(decrease) in other payables and accrued liabilities	1,672,658	(945,270)	(560,914)
Increase in other non-current liabilities	81,878	105,386	(206,354)
Cash generated from operations	14,156,523	13,979,779	13,022,114
PRC corporate income taxes paid	(949,383)	(947,703)	(548,625)
Net cash generated from operating activities	<u>13,207,140</u>	<u>13,032,076</u>	<u>12,473,489</u>
Non-cash transactions of investing activities and financing activities			
Capital injection to an associate and joint ventures by non-cash assets	186,450	—	—
Equity exchange arrangement	—	10,735,214	—
Investment in a joint venture used gallium business	—	—	352,848
Non-controlling shareholders forfeited sharing of profit or equity interest	—	—	149,322
Endorsement of notes receivables accepted from the sale of goods or services for purchase of property, plant and equipment	372,816	2,384,046	1,504,162
Acquisition of equity investments designated at fair value through other comprehensive income by exchanging equity in a subsidiary	—	—	350,911
Acquisition of businesses at non-cash consideration	50,058	70,087	—
Finance lease	44,342	113,601	—

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34. NOTES TO THE CONSOLIDATED STATEMENT OF CASH FLOWS (CONTINUED)

(b) Reconciliation of liabilities arising from financing activities

The table below details changes in the Group's liabilities from financing activities, including both cash and non-cash changes. Liabilities arising from financing activities are liabilities for which cash flows were, or future cash flows will be, classified in the Group's consolidated statement of cash flows as cash flows from financing activities.

	Financial liabilities at fair value through profit or loss	Trade and notes payables	Financial liabilities included in other current payables and accrued expenses	Financial liabilities included in other non-current liabilities	Interest bearing loans and borrowings	Total
As at January 1, 2018	89,426	12,360,441	11,363,236	769,061	103,270,773	127,852,937
Net cash generated from operating activities	—	(3,996)	(624,504)	—	—	(628,500)
Net cash flows from/(used in) investing activities	(87,660)	1,646,299	(193,345)	—	7,263,251	8,628,545
Payment of upfront interest of gold leasing arrangement	—	—	—	—	2,323,105	2,323,105
Proceeds from issuance of short-term bonds and medium-term notes, net of issuance costs	—	—	—	—	13,185,034	13,185,034
Repayments of medium-term notes and short-term bonds	—	—	—	—	(21,815,000)	(21,815,000)
Repayments of gold leasing arrangement	—	—	—	—	(7,519,283)	(7,519,283)
Drawdown of short-term and long-term bank and other loans	—	—	—	—	76,899,591	76,899,591
Repayments of short-term and long-term bank and other loans	—	—	(1,000,000)	—	(69,560,667)	(70,560,667)
Proceeds from finance lease, net of deposit and transaction costs	—	—	—	—	1,204,843	1,204,843
Capital elements of finance lease rental payment	—	—	—	—	(3,915,404)	(3,915,404)
Dividends paid by subsidiaries to non-controlling shareholders	—	—	277,771	—	—	277,771
Amortization of unrecognized finance expenses and interest expense	—	—	—	6,090	521,295	527,385
Interest paid	—	—	(460,147)	(24,736)	(85,578)	(570,461)
Reclassification	—	—	(90,644)	90,644	—	—
Net cash (used in)/ generated from financing activities	—	—	(1,273,020)	71,998	(8,762,064)	(9,963,086)
Net foreign exchange differences	—	6,520	14,095	—	916	21,531
As at December 31, 2018	1,766	14,009,264	9,286,462	841,059	101,772,876	125,911,427

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34. NOTES TO THE CONSOLIDATED STATEMENT OF CASH FLOWS (CONTINUED)

(b) Reconciliation of liabilities arising from financing activities (Continued)

	Financial liabilities at fair value through profit or loss	Trade and notes payables	Financial liabilities included in other current payables and accrued expenses	Financial Liabilities included in other non-current liabilities	Interest bearing loans and borrowings	Total
As at January 1, 2019	1,766	14,009,264	9,286,462	841,059	101,772,876	125,911,427
Net cash generated from operating activities	—	(1,385,080)	470,478	—	—	(914,602)
Net cash flows from/(used in) investing activities	(961)	(41,607)	622,995	474,548	7,157,695	8,212,670
Proceeds from gold leasing arrangement	—	—	—	—	6,921,860	6,921,860
Proceeds from issuance of short-term bonds and medium-term notes, net of issuance costs	—	—	—	—	37,965,385	37,965,385
Repayments of senior perpetual securities	—	—	—	—	(352,648)	(352,648)
Repayments of medium-term notes and short-term bonds	—	—	—	—	(22,400,000)	(22,400,000)
Repayments of gold leasing arrangement	—	—	—	—	(1,607,905)	(1,607,905)
Drawdown of short-term and long-term bank and other loans	—	—	—	—	40,669,197	40,669,197
Repayments of short-term and long-term bank and other loans	—	—	—	—	(66,105,388)	(66,105,388)
Principal portion of lease payment	—	—	—	—	(3,032,106)	(3,032,106)
Dividends paid by subsidiaries to non-controlling shareholders	—	—	(23,715)	—	—	(23,715)
Amortization of unrecognized finance expenses and interest expense	—	—	—	—	487,249	487,249
Interest paid	—	—	235,310	—	22,631	257,941
Reclassification	—	—	162,120	(162,120)	—	—
Net cash (used in)/ generated from financing activities	—	—	373,715	(162,120)	(7,431,725)	(7,220,130)
Net foreign exchange differences	—	2,178	10,408	—	31,321	43,907
As at December 31, 2019	805	12,584,755	10,764,058	1,153,487	101,530,167	126,033,272

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34. NOTES TO THE CONSOLIDATED STATEMENT OF CASH FLOWS (CONTINUED)

(c) Total cash outflow for leases

	2019
Within operating activities	65,426
Within financing activities	<u>3,032,106</u>
	<u><u>3,097,532</u></u>

ALUMINUM CORPORATION OF CHINA LIMITED
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35. SIGNIFICANT RELATED PARTY BALANCES AND TRANSACTIONS

The Company is controlled by Chinalco, the parent company and a state-owned enterprise established in Mainland China. Chinalco itself is controlled by the PRC government, which also owns a significant portion of the productive assets in Mainland China. In accordance with IAS 24 *Related Party Disclosures*, government-related entities and their subsidiaries, directly or indirectly controlled, jointly controlled or significantly influenced by the PRC government, are defined as related parties of the Group. On that basis, related parties include Chinalco and its subsidiaries (other than the Group), other government-related entities and their subsidiaries (“other state-owned enterprises”), other entities and corporations over which the Company is able to control or exercise significant influence and key management personnel of the Company and Chinalco as well as their close family members.

For the purposes of the related party transaction disclosures, the directors of the Company consider that meaningful information in respect of related party transactions has been adequately disclosed.

In addition to the related party information and transactions disclosed elsewhere in the consolidated financial statements, the following is a summary of significant related party transactions in the ordinary course of business between the Group and its related parties during the year.

(a) Significant related party transactions

	Note	2017	2018	2019
Sales of goods and services rendered:				
Sales of materials and finished goods to:				
Chinalco and its subsidiaries	(i) (ix)	10,658,507	11,248,625	13,612,817
Associates of Chinalco		682,992	897,642	514,414
Joint ventures		2,031,159	4,462,670	5,676,548
Associates		724,658	2,626,780	3,812,565
		<u>14,097,316</u>	<u>19,235,717</u>	<u>23,616,344</u>
Provision of engineering, construction and supervisory services to:				
Chinalco and its subsidiaries	(iii) (ix)	77,095	5,981	—
Joint ventures		2,046	—	—
Associates		—	1,725	—
		<u>79,141</u>	<u>7,706</u>	<u>—</u>
Provision of utility services to:				
Chinalco and its subsidiaries	(ii) (ix)	581,566	620,552	687,290
Associates of Chinalco		8,776	15,719	4,062
Joint ventures		118,280	186,672	263,436
Associates		1,122	24,309	35,650
		<u>709,744</u>	<u>847,252</u>	<u>990,438</u>

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35. SIGNIFICANT RELATED PARTY BALANCES AND TRANSACTIONS (CONTINUED)

(a) Significant related party transactions (Continued)

	Notes	2017	2018	2019
Sales of goods and services rendered: (Continued)				
Rental revenue of land use rights and buildings from:	(vi)			
Chinalco and its subsidiaries	(ix)	40,875	31,551	52,571
Associates of Chinalco		—	—	65
Joint ventures		426	1,545	1,967
Associates		—	1,511	775
		<u>41,301</u>	<u>34,607</u>	<u>55,378</u>
Purchases of goods and services:				
Purchases of engineering, construction and supervisory services from:	(iii)			
Chinalco and its subsidiaries	(ix)	1,071,283	2,088,338	2,949,866
Joint ventures		—	2,100	69,332
Associates		134,072	405,993	218,616
		<u>1,205,355</u>	<u>2,496,431</u>	<u>3,237,814</u>
Purchases of key and auxiliary materials, equipment and finished goods from:	(iv)			
Chinalco and its subsidiaries	(ix)	3,850,073	3,513,420	8,161,223
Associates of Chinalco		—	18,917	18
Joint ventures		6,516,087	8,182,251	2,647,234
Associates		1,175	2,108,072	1,893,449
		<u>10,367,335</u>	<u>13,822,660</u>	<u>12,701,924</u>
Provision of social services and logistics services by:	(v)			
Chinalco and its subsidiaries	(ix)	326,830	312,062	309,180
Provision of utility services by:	(ii)			
Chinalco and its subsidiaries	(ix)	1,412,722	992,827	763,812
Associates of Chinalco		—	96,510	100,835
Joint ventures		19,537	26,269	280,523
Associates		—	77,432	8,326
		<u>1,432,259</u>	<u>1,193,038</u>	<u>1,153,496</u>

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35. SIGNIFICANT RELATED PARTY BALANCES AND TRANSACTIONS (CONTINUED)

(a) Significant related party transactions (Continued)

	Notes	2017	2018	2019
Purchases of goods and services: (Continued)				
Provision of other services by:	(vii)			
A joint venture		269,204	226,280	272,220
Rental expenses /lease liabilities payments for buildings and land use rights charged by:	(vi)			
Chinalco and its subsidiaries	(ix)	509,848	501,866	499,191
Other significant related party transactions:				
Borrowing from a subsidiary of Chinalco	(viii), (ix)	4,010,000	6,525,000	3,890,000
Interest expense on borrowings, discounted notes and factoring arrangement from subsidiaries of Chinalco		225,934	143,415	141,991
Entrusted loans and other borrowings to:				
Joint ventures		500,000	—	—
Associates		1,100,000	—	—
		1,600,000	—	—
Interest income on entrusted loans and other borrowings:				
Joint ventures		41,005	—	—
An associate		24,425	—	—
		65,430	—	—
Interest income from the unpaid disposal proceeds from:				
Chinalco and its subsidiaries		117,587	—	—
Consideration to acquire the shares in the subsidiaries of Chinalco				
Investment to Yunnan Aluminum	(xiv)	—	—	1,287,608
Investment to Yixin Aluminum		—	—	850,000
		—	—	2,137,608
Disposal of electronic aluminium capacity quota to a subsidiary of Chinalco	(xiii)	—	—	800,000

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35. SIGNIFICANT RELATED PARTY BALANCES AND TRANSACTIONS (CONTINUED)

(a) Significant related party transactions (Continued)

	Notes	2017	2018	2019
Disposal of assets under a sale and leaseback contract to a subsidiary of Chinalco	(xi)	600,000	224,000	500,000
Finance lease under a sale and leaseback contract from a subsidiary of Chinalco	(xi), (ix)	600,036	224,000	558,924
Trade receivable factoring arrangement from a subsidiary of Chinalco	(ix)	1,570,000	470,101	136,656
Discounted notes receivable to a subsidiary of Chinalco	(viii)	523,253	756,000	679,517
Provision of financial guarantees to:				
A joint venture	(x)	18,350	12,450	12,450
Financial guarantees provided by:				
Subsidiaries of Chinalco		4,000	—	—

All transactions with related parties were conducted at prices and on terms mutually agreed by the parties involved, which are determined as follows:

- (i) Sales of materials and finished goods comprised sales of alumina, primary aluminum, copper and scrap materials. Transactions entered into are covered by general agreements on a mutual provision of production supplies and ancillary services. The pricing policy is summarized below:
1. The price prescribed by the PRC government (“the state-prescribed price”) is adopted;
 2. If there is no state-prescribed price, the state-guidance price is adopted;
 3. If there is neither a state-prescribed price nor state-guidance price, then the market price (being price charged to and from independent third parties) is adopted; and
 4. If none of the above is available, then the adoption of a contractual price (being reasonable costs incurred in providing the relevant services plus not more than 5% of such costs is adopted).

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35. SIGNIFICANT RELATED PARTY BALANCES AND TRANSACTIONS (CONTINUED)

(a) Significant related party transactions (Continued)

All transactions with related parties are conducted at prices and terms mutually agreed by the parties involved, which are determined as follows:
(Continued)

- (ii) Utility services, including electricity, gas, heat and water, are provided at the state-prescribed price.
- (iii) Engineering, project construction and supervisory services were provided for construction projects. The state-guidance price or prevailing market price (including the tender price where by way of tender) is adopted for pricing purposes.
- (iv) The pricing policy for purchases of key and auxiliary materials (including bauxite, limestone, carbon, cement and coal) is the same as that set out in (i) above.
- (v) Social services and logistics services provided by Chinalco Group cover public security, fire services, education and training, school and hospital services, cultural and physical education, newspaper and magazines, broadcasting and printing as well as property management, environmental and hygiene, greenery, nurseries and kindergartens, sanatoriums, canteens and offices, public transport and retirement management and other services. Provisions of these services are covered by the Comprehensive Social and Logistics Services Agreement. The pricing policy is the same as that set out in (i) above.
- (vi) Pursuant to the Land Use Rights Lease Agreements entered into between the Group and Chinalco Group, operating leases for industrial or commercial land are charged at the market rent rate. The Group also entered into a building rental agreement with Chinalco Group and paid rent based on the market rate for its lease of buildings owned by Chinalco.
- (vii) Other services are environmental protection operation services. The prevailing market price is adopted for pricing purposes.

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35. SIGNIFICANT RELATED PARTY BALANCES AND TRANSACTIONS (CONTINUED)

(a) Significant related party transactions (Continued)

All transactions with related parties are conducted at prices and terms mutually agreed by the parties involved, which are determined as follows:
(Continued)

- (viii) Chinalco Finance Company Limited (“Chinalco Finance”)* (中鋁財務有限責任公司), a wholly-owned subsidiary of Chinalco and a non-bank financial institution established in the PRC, provides deposit services, credit services and miscellaneous financial services to the Group. The terms for the provision of financial services to the Group are no less favourable than those of the same type of financial services provided by Chinalco Finance to Chinalco and other members of its group or those of the same type of financial services that may be provided to the Group by other financial institutions.
- (ix) These related party transactions also constitute connected transactions or continuing connected transactions as defined in Chapter 13A of the Listing Rules.
- (x) In December 2006, Ningxia Energy, a subsidiary of the Company, entered into a financial guarantee contract with China Construction Bank providing a financial guarantee to Tian Jing Shen Zhou Wind Power Co., Ltd, a joint venture of the Company, for its 14-year bank loan amounting to RMB35 million. As at December 31, 2019, the outstanding amount of the guarantee was RMB6 million.
- (xi) As disclosed in Note 20, the Group has entered into several sales and leaseback contracts with Chalco Financial Leasing Co., Ltd..
- (xii) As disclosed in Note 38, the Group acquired a 100% equity interest in Suzhou Zhongcai from Zhongse Technology and Suzhou Research Institute, which constituted a related party transaction.
- (xiii) As disclosed in Note 27, in May 2019, the Group entered into transactions with its fellow subsidiaries including the disposals of subsidiaries and disposal of electronic Aluminum capacity quota. These transactions constituted related party transactions.
- (xiv) As disclosed in Note 8 (b), the Company completed the acquisitions of equity interests in Yunnan Aluminum and Yixin Aluminum, respectively. These transactions constituted related party transactions.

* *The English names represent the best effort made by management of the Group in translating the Chinese names of the companies as they do not have any official English names.*

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35. SIGNIFICANT RELATED PARTY BALANCES AND TRANSACTIONS (CONTINUED)

(b) Balances with related parties

Other than those disclosed elsewhere in the consolidated financial statements, the outstanding balances with related entities at the year end are as follows:

	December 31, 2018	December 31, 2019
Cash and cash equivalents deposited with		
A subsidiary of Chinalco *	<u>9,101,541</u>	<u>3,285,093</u>
Trade and notes receivables		
Chinalco and its subsidiaries	1,281,395	1,054,168
Associates of Chinalco	18,655	6,034
Joint ventures	819,878	788,183
Associates	<u>6,615</u>	<u>25</u>
	2,126,543	1,848,410
Provision for impairment of receivables	<u>(77,657)</u>	<u>(17,815)</u>
	<u>2,048,886</u>	<u>1,830,595</u>

* On August 26, 2011, the Company entered into an agreement with Chinalco Finance, pursuant to which, Chinalco Finance agreed to provide deposit services, credit services and other financial services to the Group. On August 24, 2012, April 28, 2015 and October 26, 2017, the Company renewed the financial service agreement with Chinalco Finance with a validation term of three years ending on October 26, 2020.

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35. SIGNIFICANT RELATED PARTY BALANCES AND TRANSACTIONS (CONTINUED)

(b) Balances with related parties (Continued)

	December 31, 2018	December 31, 2019
Other current assets		
Chinalco and its subsidiaries	830,615	482,195
Joint ventures	1,424,678	1,503,505
Associates	29,701	47,743
	<u>2,284,994</u>	<u>2,033,443</u>
Provision for impairment of other current assets	(40,830)	(30,509)
	<u>2,244,164</u>	<u>2,002,934</u>
Other non-current assets		
Associates	<u>111,845</u>	<u>111,845</u>
Interest-bearing loans and borrowings		
Subsidiaries of Chinalco (including lease liabilities)	<u>4,373,033</u>	<u>9,857,187</u>
Trade and notes payables		
Chinalco and its subsidiaries	404,278	334,840
Joint ventures	631,570	527,744
Associates	13,033	9,789
Associates of Chinalco	4,012	917
	<u>1,052,893</u>	<u>873,290</u>

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35. SIGNIFICANT RELATED PARTY BALANCES AND TRANSACTIONS (CONTINUED)

(b) Balances with related parties (Continued)

	December 31, 2018	December 31, 2019
Other payables and accrued liabilities		
Chinalco and its subsidiaries	1,930,947	1,810,514
Associates of Chinalco	17,128	17,056
Associates	148,978	80,012
Joint ventures	8,860	73,823
	<u>2,105,913</u>	<u>1,981,405</u>
	December 31, 2018	December 31, 2019
Contract Liabilities		
Chinalco and its subsidiaries	22,307	29,210
Associates of Chinalco	20	—
Associates	12,451	223
Joint ventures	94,367	56,010
	<u>129,145</u>	<u>85,443</u>

As at December 31, 2019, included in long-term loans and borrowings and short-term loans and borrowings were from other state-owned enterprises amounting to RMB35,029 million (December 31, 2018: RMB42,553 million) and RMB29,781 million (December 31, 2018: RMB41,189 million), respectively.

The terms of all balances with the exception of the entrusted loans were unsecured and were in accordance with terms as set out in the respective agreements or as mutually agreed between the parties concerned.

(c) Compensation of key management personnel

	2017	2018	2019
Fees	768	756	780
Basic salaries, housing fund, other allowances and benefits in kind	3,830	3,953	6,945
Pension costs	415	482	715
	<u>5,013</u>	<u>5,191</u>	<u>8,440</u>

* The year-on-year increase in the salaries of key management personnel was mainly due to the Company's addition of a salaried supervisor this year and changes in the positions of some key management personnel, which caused the year-on-year changes in the scope and duration of salaries paid by the company.

Details of directors' remuneration are included in Note 30 to the financial statements.

(d) Commitments with related parties

As at December 31, 2019 and 2018, except for the other capital commitments disclosed in Note 42(c) to these financial statements, the Group had no significant commitments with related parties.

ALUMINUM CORPORATION OF CHINA LIMITED
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36. FINANCIAL AND CAPITAL RISK MANAGEMENT

36.1 Financial risk management

The Group's activities expose it to a variety of financial risks, including market risk (including foreign currency risk, interest rate risk and commodity price risk), credit risk and liquidity risk. The Group's overall risk management program focuses on the unpredictability of financial markets and seeks to minimise the potential adverse effects on the Group's financial performance.

Risk management is carried out by the treasury management department (the "Group Treasury") under policies approved by the board of directors of the Company. The Group Treasury identifies, evaluates and hedges financial risks through close co-operation with the Group's operating units.

(a) Market risk

(i) Foreign currency risk

Foreign currency risk primarily arises from certain significant foreign currency deposits, trade and notes receivables, trade and notes payables, advances paid to suppliers, and short-term and long-term loans denominated in United States dollars ("USD"), Australian dollars ("AUD"), Euro ("EUR"), Japanese yen ("JPY"), and Hong Kong dollars ("HKD"). Related exposures are disclosed in Notes 13, 14, 15, 18, 22, 23 and 40 to the financial statements, respectively. The Group Treasury closely monitors the international foreign currency market on the change of exchange rates and takes these into consideration when investing in foreign currency deposits and borrowing loans. As at December 31, 2019, the Group only had significant exposure to USD.

As at December 31, 2019, if RMB had strengthened/weakened by 5% against USD with all other variables held constant, the profit for the year would have been approximately RMB95 million higher/lower (2018: RMB10 million lower/higher), mainly as a result of foreign exchange gains and losses arising from the translation of USD-denominated borrowings, other payables and medium-term notes. Profit was more sensitive to the fluctuation in the RMB/USD exchange rates in 2019 than in 2018, mainly due to the increase in the USD denominated other payables and medium-term notes.

As the assets and liabilities denominated in other foreign currencies other than USD were relatively minimal to the total assets and liabilities of the Group, the directors of the Company are of the opinion that the Group was not exposed to any significant foreign currency risk arising from these foreign currency denominated assets and liabilities as at December 31, 2019 and 2018.

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.1 Financial risk management (Continued)

(a) Market risk (Continued)

(ii) Interest rate risk

As at December 31, 2019, as the Group had no significant interest-bearing assets except for bank deposits (Note 15) and entrusted loans (Note 14), the Group's income and operating cash flows are substantially independent of changes in market interest rates.

Most of the bank deposits are maintained in savings and time deposit accounts in the PRC. The interest rates are regulated by the People's Bank of China and the Group Treasury closely monitors the fluctuation on such rates periodically. The interest rates of entrusted loans are fixed. As the interest rates applied to the entrusted loans were fixed, the directors of the Company are of the opinion that the Group was not exposed to any significant interest rate risk for its financial assets held as at December 31, 2019 and 2018.

The interest rate risk for the Group's financial liabilities primarily arises from interest-bearing loans. Loans borrowed at floating interest rates expose the Group to cash flow interest rate risk. The Group enters into debt obligations to support general corporate purposes including capital expenditures and working capital needs. The Group Treasury closely monitors market interest rates and maintains a balance between variable rate and fixed rate borrowings in order to reduce the exposures to the interest rate risk described above.

As at December 31, 2019, if interest rates had been 100 basis points (December 31, 2018: 100 basis points) higher/lower for bank and other loans borrowed at floating interest rates with all other variables held constant, net profit for the year would have been RMB451 million lower/higher (2018: RMB641 million), respectively, mainly as a result of the higher/ lower interest expense on floating rate borrowings.

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.1 Financial risk management (Continued)

(a) **Market risk (Continued)**

(ii) Interest rate risk (Continued)

The interest rate risk of the Group mainly arises from medium-term notes and short-term bonds issued at fixed rates. As the fluctuation of comparable interest rates of corporate bonds with similar terms was relatively low, the directors of the Company are of the opinion that the Group was not exposed to any significant fair value interest rate risk for its fixed interest rate borrowings held as at December 31, 2019 and 2018.

(iii) Commodity price risk

The Group uses futures and option contracts to reduce its exposure to fluctuations in the price of primary aluminum and other products. The Group uses the futures contract for hedging other than speculation. With reference to the hedging of primary aluminum, production company hedges the output of primary aluminum and trading company hedges the quantities of buyout and self-supporting.

The Group uses mainly futures contracts and option contracts traded on the Shanghai Futures Exchange and London Metal Exchange ("LME") to hedge against fluctuations in primary aluminum prices. As at December 31, 2019, the fair values of the outstanding futures contracts amounting to RMB3 million (December 31, 2018: RMB16 million) and RMB1 million (December 31, 2018: RMB2 million) were recognized in financial assets and financial liabilities at fair value through profit or loss, respectively. As at December 31, 2019, the Company did not hold any option contracts (December 31, 2018: the Company did not hold any option contracts).

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.1 Financial risk management (Continued)

(a) Market risk (Continued)

(iii) Commodity price risk (Continued)

As at December 31, 2019, if the commodity futures prices had increased/decreased by 3% (December 31, 2018: 3%) and all other variables held constant, the profit for the year would have changed by the amounts shown below:

	2018	2019
Primary aluminum	Decrease/increase RMB14 million	Decrease/increase RMB40 million
Copper	Increase/decrease RMB0.9 million	Increase/decrease RMB0.9 million
Zinc	Decrease/increase RMB1.0 million	Decrease/increase RMB5.1 million
Coal	Decrease/increase RMB2.7 million	Decrease/increase RMB0.2 million

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.1 Financial risk management *(Continued)*

(b) Credit risk

Credit risk arises from balances with banks and financial institutions, trade and notes receivables, other current and non-current receivables as well as credit exposures of customers, including outstanding receivables and committed transactions.

The Group maintains substantially all of its bank balances and cash and short-term investments in several major state-owned banks in the PRC. With strong support from the PRC government to these state-owned banks, the directors of the Company are of the opinion that there is no significant credit risk on such assets being exposed to losses.

The Group applies the simplified approach to most of its trade receivables to provide for expected credit losses prescribed by IFRS 9, which permits the use of the lifetime expected loss provision for trade receivables. The Group has made individual assessment for trade receivables from clients with top rating and those receivables with pledged assets separately and impairment provisions are made.

To measure the expected credit losses of trade receivables excluding individually assessed and impaired receivables, trade receivables have been grouped based on shared credit risk characteristics and the days past due. The expected credit loss model also incorporates forward-looking information.

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.1 Financial risk management (Continued)

(b) Credit risk (Continued)

The Group has performed historical analysis and identified the key economic variables impacting credit risk and expected credit losses. It considers available reasonable and supportive forwarding-looking information. Especially the following indicators are incorporated:

- internal credit rating
- external credit rating
- actual or expected significant adverse changes in business, financial or economic conditions that are expected to cause a significant change to the borrower's ability to meet its obligations
- actual or expected significant changes in the operating results of individual clients
- significant changes in the expected performance and behaviour of the clients

The Group measures expected credit loss rates on the basis of a loss rate approach by segmenting its portfolio into appropriate groupings based on shared credit risk characteristics. At the end of each year, the Group updates its historical loss information with forward-looking information. As the historical credit loss rates were comparatively stable and no significant changes were expected to the forward-looking information after the consideration of reasonable and supportable forecasts of comparatively stable customer relationship and customers' credit ratings, the expected credit loss rates remained consistent during 2019.

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.1 Financial risk management (Continued)

(b) Credit risk (Continued)

Maximum exposure and year-end staging as at December 31, 2018 and 2019

The table below shows the credit quality and the maximum exposure to credit risk based on the Group's credit policy, which is mainly based on past due information unless other information is available without undue cost or effort, and year-end staging classification as at December 31, 2018 and 2019. The amounts presented are carrying amounts for financial assets and the exposure to credit risk for the financial guarantee contracts.

Year ended December 31, 2018	Stage 1	Stage 2	Stage 3	Simplified	Total
Trade receivables*	—	—	—	5,209,535	5,209,535
Financial assets in other current assets	1,098,455	3,655,638	121,432	—	4,875,525
Restricted cash	2,165,288	—	—	—	2,165,288
Notes receivable	2,894,482	—	—	—	2,894,482
Cash and cash equivalents	19,130,835	—	—	—	19,130,835
Financial assets in other non-current assets	204,718	—	—	—	204,718
Financial guarantees-not yet past due	12,450	—	—	—	12,450
Total	25,506,228	3,655,638	121,432	5,209,535	34,492,833
Year ended December 31, 2019	Stage 1	Stage 2	Stage 3	Simplified	Total
Trade receivables*	—	—	—	4,559,112	4,559,112
Financial assets in other current assets	1,632,766	3,970,620	120,538	—	5,723,924
Restricted cash	1,305,781	—	—	—	1,305,781
Notes receivable	2,834,011	—	—	—	2,834,011
Cash and cash equivalents	7,759,190	—	—	—	7,759,190
Financial assets in other non-current assets	128,673	—	—	—	128,673
Financial guarantees-not yet past due	5,772	—	—	—	5,772
Total	13,666,193	3,970,620	120,538	4,559,112	22,316,463

* For trade receivables to which the Group applies the simplified approach for impairment, information based on the provision matrix is disclosed in Notes 13 to the consolidated financial statements.

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.1 Financial risk management (Continued)

(b) Credit risk (Continued)

The carrying amounts of short-term investments and these receivables included in Notes 9, 11, 13, and 14 represent the Group's maximum exposure to credit risk in relation to its financial assets. The Group also provided financial guarantees to certain subsidiaries and a joint venture. The guarantees to the joint venture mentioned in Note 35 represented the Group's maximum exposure to credit risk in relation to its guarantees to the joint venture.

For the year ended December 31, 2019, revenues of approximately RMB40,567 million (2017: RMB39,759 million, 2018: RMB32,852 million) were derived from entities directly or indirectly owned or controlled by the PRC government including Chinalco. There were no other individual customers from whom the Group has derived revenue of more than 10% of the Group's revenue during the years ended December 31, 2017, 2018 and 2019. Thus, the directors of the Company are of the opinion that the Group was not exposed to any significant concentration of credit risk as at December 31, 2019 and 2018.

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.1 Financial risk management (Continued)

(c) Liquidity risk

Cash flow forecast is performed in the operating entities of the Group and aggregated by the Group Treasury. The Group Treasury monitors rolling forecasts of the Group's liquidity requirements to ensure it has sufficient cash to meet operational needs while maintaining sufficient headroom on its undrawn committed borrowing facilities at all times so that the Group does not breach borrowing limits or covenants (where applicable) on any of its borrowing facilities. This forecast takes into consideration of the Group's debt financing plans, covenant compliance, compliance with internal balance sheet ratio targets and, if applicable, external regulatory or legal requirements, for example, currency restrictions.

As at December 31, 2019, the Group had total banking facilities of approximately RMB167,431 million of which the amounts totalling RMB49,347 million have been utilized as at December 31, 2019. Banking facilities of approximately RMB108,360 million will be subject to renewal during the next 12 months. The directors of the Company are confident that such banking facilities can be renewed upon expiration based on their past experience and good credit standing.

In addition, as at December 31, 2019, the Group had no credit facilities through its futures agent at the LME (December 31, 2018: USD12 million (equivalent to RMB82 million), of which USD1 million (equivalent to RMB7 million) has been utilized. The futures agent has the right to adjust the related credit facilities.)

Management also monitors rolling forecasts of the Group's liquidity reserve on the basis of the expected cash flows.

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.1 Financial risk management (Continued)

(c) Liquidity risk (Continued)

The table below analyzes the maturity profile of the Group's financial liabilities as at the end of the reporting period. The amounts disclosed in the table are the contractual undiscounted cash flows.

	Within 1 year	1 to 2 years	2 to 5 years	Over 5 years	Total
As at December 31, 2018					
Finance lease payables, including current portion	2,518,653	1,161,490	707,716	13,238	4,401,097
Long-term bank and other loans, including current portion	3,384,400	7,377,956	16,593,587	18,784,797	46,140,740
Medium-term notes and bonds, including current portion	400,000	—	9,785,840	—	10,185,840
Short-term bonds	500,000	—	—	—	500,000
Gold leasing arrangement	1,607,905	—	—	—	1,607,905
Short-term bank and other loans	39,348,100	—	—	—	39,348,100
Interest payables for borrowings	4,848,968	2,602,751	4,197,364	898,786	12,547,869
Financial liabilities at fair value through profit or loss	1,766	—	—	—	1,766
Financial liabilities included in other payables and accrued liabilities, excluding accrued interest	8,890,176	—	—	—	8,890,176
Financial liabilities included in other non-current liabilities (Note)	—	108,896	333,354	420,258	862,508
Trade and notes payables	14,009,264	—	—	—	14,009,264
	<u>75,509,232</u>	<u>11,251,093</u>	<u>31,617,861</u>	<u>20,117,079</u>	<u>138,495,265</u>

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.1 Financial risk management (Continued)

(c) Liquidity risk (Continued)

	Within 1 year	1 to 2 years	2 to 5 years	Over 5 years	Total
As at December 31, 2019					
Lease liabilities, including current portion	1,729,933	1,106,701	1,333,762	10,377,143	14,547,539
Long-term bank and other loans, including current portion	3,339,687	7,525,775	9,159,028	18,811,397	38,835,887
Medium-term notes and bonds, including current portion	—	7,285,840	9,500,000	—	16,785,840
Short-term bonds	9,300,000	—	—	—	9,300,000
Gold leasing arrangement	6,921,860	—	—	—	6,921,860
Short-term bank and other loans	21,238,166	—	—	—	21,238,166
Interest payables for loans and borrowings	4,955,925	2,289,092	4,220,111	978,041	12,443,169
Financial liabilities at fair value through profit or loss	805	—	—	—	805
Financial liabilities included in other payables and accrued liabilities, excluding accrued interest	10,288,657	—	—	—	10,288,657
Financial liabilities included in other non-current liabilities (Note)	—	176,232	182,006	857,647	1,215,885
Trade and notes payables	12,584,755	—	—	—	12,584,755
	<u>70,359,788</u>	<u>18,383,640</u>	<u>24,394,907</u>	<u>31,024,228</u>	<u>144,162,563</u>

Note: As disclosed in Note 21, as at December 31, 2019, the carrying value of financial liabilities included in other non-current liabilities was RMB1,153 million (December 31, 2018: RMB841 million).

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.2 Financial instruments

(a) Financial instruments by category

The carrying amounts of each of the categories of financial instruments of the Group as at the end of the reporting period are as follows:

Financial assets

	December 31, 2018				Total
	Financial assets at fair value through profit or loss		Financial assets at amortized cost	Equity investments designated at fair value through other comprehensive income	
	Designated as such upon initial recognition	Held for trading			
Current					
Trade and notes receivables	—	—	8,104,017	—	8,104,017
Financial assets at fair value through profit or loss	—	16,141	—	—	16,141
Restricted cash and time deposits	—	—	2,165,288	—	2,165,288
Cash and cash equivalents	—	—	19,130,835	—	19,130,835
Financial assets included in other current assets	—	—	4,875,530	—	4,875,530
Subtotal	—	16,141	34,275,670	—	34,291,811
Non-current					
Equity investments designated at fair value through other comprehensive income	—	—	—	1,729,825	1,729,825
Other non-current assets	—	—	204,718	—	204,718
Subtotal	—	—	204,718	1,729,825	1,934,543
Total	—	16,141	34,480,388	1,729,825	36,226,354

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.2 Financial instruments (Continued)

(a) Financial instruments by category (Continued)

Financial liabilities

	December 31, 2018			Total
	Financial liabilities at fair value through profit or loss		Financial liabilities at amortized cost	
	Designated as such upon initial recognition	Held for trading		
Current				
Financial liabilities at fair value through profit or loss	—	1,766	—	1,766
Interest-bearing loans and borrowings	—	—	47,565,490	47,565,490
Financial liabilities included in other payables and accrued liabilities (Note 22)	—	—	9,286,462	9,286,462
Trade and notes payables	—	—	14,009,264	14,009,264
Subtotal	—	1,766	70,861,216	70,862,982
Non-current				
Financial liabilities included in other non-current liabilities (Note 21)	—	—	841,059	841,059
Interest-bearing loans and borrowings	—	—	54,207,386	54,207,386
Subtotal	—	—	55,048,445	55,048,445
Total	—	1,766	125,909,661	125,911,427

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.2 Financial instruments (Continued)

(a) Financial instruments by category (Continued)

Financial assets

	December 31, 2019					Total
	Financial assets at fair value through profit or loss		Financial assets at amortized cost	Equity investments designated at fair value through other comprehensive income	Debt instruments at fair value through other comprehensive income	
	Designated as such upon initial recognition	Held for trading				
Current						
Trade receivables	—	—	4,559,112	—	—	4,559,112
Notes receivable	—	—	—	—	2,834,011	2,834,011
Financial assets at fair value through profit or loss*	—	3,503,175	—	—	—	3,503,175
Restricted cash and time deposits	—	—	1,305,781	—	—	1,305,781
Cash and cash equivalents	—	—	7,759,190	—	—	7,759,190
Financial assets included in other current assets	—	—	5,723,924	—	—	5,723,924
Subtotal	—	3,503,175	19,348,007	—	2,834,011	25,685,193
Non-current						
Equity investments designated at fair value through other comprehensive income	—	—	—	2,239,251	—	2,239,251
Other non-current assets	—	—	128,673	—	—	128,673
Subtotal	—	—	128,673	2,239,251	—	2,367,924
Total	—	3,503,175	19,476,680	2,239,251	2,834,011	28,053,117

* Financial assets measured at fair value through profit or loss are mainly wealth management products, denominated in RMB, with expected rates of return depending on the interest rates and yield curves observable at commonly quoted intervals. The fair value approximates to the carrying amount of the financial assets measured at fair value through profit or loss.

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.2 Financial instruments (Continued)

(a) Financial instruments by category (Continued)

Financial liabilities

	December 31, 2019			Total
	Financial liabilities at fair value through profit or loss		Financial liabilities at amortized cost	
	Designated as such upon initial recognition	Held for trading		
Current				
Financial liabilities at fair value through profit or loss	—	805	—	805
Interest-bearing loans and borrowings	—	—	42,286,604	42,286,604
Financial liabilities included in other payables and accrued liabilities (Note 22)	—	—	10,782,998	10,782,998
Trade and notes payables	—	—	12,584,755	12,584,755
Subtotal	—	805	65,654,357	65,655,162
Non-current				
Financial liabilities included in other non-current liabilities (Note 21)	—	—	1,153,487	1,153,487
Interest-bearing loans and borrowings	—	—	59,243,563	59,243,563
Subtotal	—	—	60,397,050	60,397,050
Total	—	805	126,051,407	126,052,212

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.2 Financial instruments (Continued)

(b) Fair value and fair value hierarchy

Fair value

The carrying amounts and fair values of the Group's financial instruments, other than those with carrying amounts that reasonably approximate to fair values and those carried at fair value, are as follows:

	Carrying amounts		Fair values	
	December 31, 2018	December 31, 2019	December 31, 2018	December 31, 2019
Financial assets				
Other non-current assets (Note 11)	204,718	128,673	182,132	111,935
	<u>204,718</u>	<u>128,673</u>	<u>182,132</u>	<u>111,935</u>

	Carrying amounts		Fair values	
	December 31, 2018	December 31, 2019	December 31, 2018	December 31, 2019
Financial liabilities				
Financial liabilities included in other non-current liabilities (Note 21)	841,059	1,153,487	816,529	1,146,893
Long-term interest-bearing loans and borrowings, excluding lease liability (Note 18)	54,207,386	52,232,955	53,207,052	50,952,676
	<u>55,048,445</u>	<u>53,386,442</u>	<u>54,023,581</u>	<u>52,099,569</u>

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.2 Financial instruments (Continued)

(b) Fair value and fair value hierarchy (Continued)

Fair value (Continued)

Management has assessed that the fair values of cash and cash equivalents, restricted cash and time deposits, trade and notes receivables, financial assets included in other current assets, entrusted loans, trade and notes payables, financial liabilities included in other payables and accrued liabilities, short-term and the current portion of interest-bearing loans and borrowings, interest payable and the current portion of long-term payables approximate to their carrying amounts largely due to the short term maturities of these instruments.

The fair values of the financial assets and liabilities are included at the amount at which the instrument could be exchanged in a current transaction between willing parties, other than in a forced or liquidation sale.

The fair values of the financial assets included in other non-current assets and financial liabilities included in other non-current liabilities and long-term interest-bearing loans and borrowings have been calculated by discounting the expected future cash flows using rates currently available for instruments on with similar terms, credit risk and remaining maturities.

The Group's own non-performance risk for financial liabilities included in other non-current liabilities and long-term interest-bearing loans and borrowings as at December 31, 2019 was assessed to be insignificant.

36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.2 Financial instruments (Continued)

(b) Fair value and fair value hierarchy (Continued)

Fair value hierarchy

The following tables illustrate the fair value measurement hierarchy of the Group's financial instruments:

Assets measured at fair value

As at December 31, 2018

	Fair value measurement using			Total
	Quoted prices in active markets (Level 1)	Significant observable inputs (Level 2)	Significant unobservable inputs (Level 3)	
Financial assets at fair value through profit or loss:				
Futures contracts	16,141	—	—	16,141
Equity investments designated at fair value through other comprehensive income:				
Listed equity investments	6,441	—	—	6,441
Other unlisted investment	—	—	1,723,384	1,723,384
	22,582	—	1,723,384	1,745,966

As at December 31, 2019

	Fair value measurement using			Total
	Quoted prices in active markets (Level 1)	Significant observable inputs (Level 2)	Significant unobservable inputs (Level 3)	
Financial assets at fair value through profit or loss:				
Futures contracts	3,175	—	—	3,175
Financial product	—	3,500,000	—	3,500,000
Debt instruments at fair value through other comprehensive income - notes receivable	—	2,834,011	—	2,834,011
Equity investments designated at fair value through other comprehensive income:				
Listed equity investments	8,853	—	—	8,853
Other unlisted investment	—	—	2,230,398	2,230,398
	12,028	6,334,011	2,230,398	8,576,437

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.2 Financial instruments (Continued)

(b) Fair value and fair value hierarchy (Continued)

Fair value hierarchy (Continued)

Liabilities measured at fair value

As at December 31, 2018

	Fair value measurement using			Total
	Quoted prices in active markets (Level 1)	Significant observable inputs (Level 2)	Significant unobservable inputs (Level 3)	
Financial liabilities at fair value through profit or loss:				
Futures contracts	1,766	—	—	1,766
	1,766	—	—	1,766

As at December 31, 2019

	Fair value measurement using			Total
	Quoted prices in active markets (Level 1)	Significant observable inputs (Level 2)	Significant unobservable inputs (Level 3)	
Financial liabilities at fair value through profit or loss:				
Futures contracts	805	—	—	805
	805	—	—	805

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.2 Financial instruments (Continued)

(b) Fair value and fair value hierarchy (Continued)

Fair value hierarchy (Continued)

Assets for which fair values are disclosed

As at December 31, 2018	Fair value measurement using			Total
	Quoted prices in active markets (Level 1)	Significant observable inputs (Level 2)	Significant unobservable inputs (Level 3)	
Loans and receivables:				
Financial assets included in other non-current assets	—	182,132	—	182,132

As at December 31, 2019	Fair value measurement using			Total
	Quoted prices in active markets (Level 1)	Significant observable inputs (Level 2)	Significant unobservable inputs (Level 3)	
Loans and receivables:				
Financial assets included in other non-current assets	—	111,935	—	111,935

36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.2 Financial instruments (Continued)

(b) Fair value and fair value hierarchy (Continued)

Fair value hierarchy (Continued)

Liabilities for which fair values are disclosed

As at December 31, 2018

	Fair value measurement using			Total
	Quoted prices in active markets (Level 1)	Significant observable inputs (Level 2)	Significant unobservable inputs (Level 3)	
Financial liabilities at amortized cost:				
Financial liabilities included in other non-current liabilities	—	816,529	—	816,529
Long-term interest-bearing loans and borrowings	—	53,207,052	—	53,207,052
	—	54,023,581	—	54,023,581

As at December 31, 2019

	Fair value measurement using			Total
	Quoted prices in active markets (Level 1)	Significant observable inputs (Level 2)	Significant unobservable inputs (Level 3)	
Financial liabilities at amortized cost:				
Financial liabilities included in other non-current liabilities	—	1,146,893	—	1,146,893
Long-term interest-bearing loans and borrowings	—	50,952,676	—	50,952,676
	—	52,099,569	—	52,099,569

During the year ended December 31, 2019, the Group had no transfers of fair value measurements between Level 1 and Level 2 and no transfers into or out of Level 3 for both financial assets and financial liabilities (2018: Nil).

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.2 Financial instruments (Continued)

(b) Fair value and fair value hierarchy (Continued)

Fair value hierarchy (Continued)

Liabilities for which fair values are disclosed (Continued)

Below is a summary of significant unobservable inputs to the valuation of financial instruments as at December 31, 2019 and 2018:

	Valuation Technique	Significant unobservable input	Range
Equity investments in Size Industry Investment Fund			
December 31, 2019	Net Assets Method	Net Assets	5,000,000
December 31, 2018	Net Assets Method	Net Assets	5,000,000
Chinalco Innovative			
December 31, 2019	Net Assets Method	Net Assets	350,911

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36. FINANCIAL AND CAPITAL RISK MANAGEMENT (CONTINUED)

36.3 Capital risk management

The Group's capital management objectives are to safeguard the Group's ability to continue as a going concern in order to provide returns for shareholders and benefits for other stakeholders, and to maintain an optimal capital structure to reduce the cost of capital.

In order to maintain or adjust the capital structure, the Group may adjust the amount of dividends paid to shareholders, issue new shares or sell assets to reduce debts.

Consistent with other entities in the industry, the Group monitors capital on the basis of its gearing ratio. This ratio is calculated as net debt divided by total capital. Net debt is calculated as total liabilities (excluding deferred tax liabilities, income tax payable and deferred government grants) less restricted cash, time deposits and cash and cash equivalents. Total capital is calculated as equity, as shown in the consolidated statement of financial position, plus net debt less non-controlling interests.

The gearing ratio as at December 31, 2018 and 2019 is as follows:

	December 31, 2018	December 31, 2019
Total liabilities (excluding deferred tax liabilities, income tax payable and deferred government grants)	131,054,499	130,170,395
Less: Restricted cash, time deposits and cash and cash equivalents	(21,296,123)	(9,064,971)
Net debt	<u>109,758,376</u>	<u>121,105,424</u>
Total equity	67,669,619	70,725,060
Add: net debt	109,758,376	121,105,424
Less: non-controlling interests	(15,254,312)	(16,065,427)
Total capital attributable to owners of the parent	<u>162,173,683</u>	<u>175,765,057</u>
Gearing ratio	<u>68%</u>	<u>69%</u>

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37. PARTLY-OWNED SUBSIDIARIES WITH MATERIAL NON-CONTROLLING INTERESTS

Other than the senior perpetual securities issued by a subsidiary of the Group, which is disclosed in Note 40, details of the Group's subsidiaries that have material non-controlling interests are set out below:

	2018	2019
Percentage of equity interest held by non-controlling interests		
Ningxia Energy	29.18%	29.18%
Shanxi Zhongrun	60.00%	56.61%
Guizhou Huaren	60.00%	60.00%
Profit for the year allocated to non-controlling interests		
Ningxia Energy	214,479	240,504
Shanxi Zhongrun	291,009	69,701
Guizhou Huaren	20,783	198,016
Dividends distributed to non-controlling interests		
Ningxia Energy	351,979	76,469
Shanxi Zhongrun	200,000	—
Guizhou Huaren	—	—
Accumulated balances of non-controlling interests at the Year ended		
Ningxia Energy	4,757,014	4,978,089
Shanxi Zhongrun	782,176	996,686
Guizhou Huaren	820,675	1,028,426

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37. PARTLY-OWNED SUBSIDIARIES WITH MATERIAL NON-CONTROLLING INTERESTS (CONTINUED)

The following tables illustrate the summarized financial information of the above subsidiaries. The amounts disclosed are before any inter-company eliminations:

2018	Ningxia Energy
Revenue	6,714,040
Total expenses	6,555,933
Profit for the year	158,107
Total comprehensive income for the year	158,107
Current assets	5,036,413
Non-current assets	32,677,977
Current liabilities	8,723,922
Non-current liabilities	18,367,979
Net cash flows from operating activities	2,755,612
Net cash flows used in investing activities	(1,616,513)
Net cash flows from financing activities	(991,998)
Effect of foreign exchange rate changes, net	—
Net increase in cash and cash equivalents	147,101

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37. PARTLY-OWNED SUBSIDIARIES WITH MATERIAL NON-CONTROLLING INTERESTS (CONTINUED)

The following tables illustrate the summarized financial information of the above subsidiaries. The amounts disclosed are before any inter-company eliminations: (Continued)

2019	Ningxia Energy
Revenue	6,695,724
Total expenses	6,314,098
Profit for the year	381,626
Total comprehensive income for the year	381,626
Current assets	5,081,743
Non-current assets	32,133,495
Current liabilities	8,688,475
Non-current liabilities	17,559,995
Net cash flows from operating activities	3,274,683
Net cash flows used in investing activities	(939,054)
Net cash flows from financing activities	(2,611,597)
Effect of foreign exchange rate changes, net	—
Net decrease in cash and cash equivalents	(275,968)

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37. PARTLY-OWNED SUBSIDIARIES WITH MATERIAL NON-CONTROLLING INTERESTS (CONTINUED)

The following tables illustrate the summarized financial information of the above subsidiaries. The amounts disclosed are before any inter-company eliminations: (Continued)

2018	Shanxi Zhongrun
Revenue	645,413
Total expenses	644,596
Profit for the year	817
Total comprehensive income for the year	817
Current assets	605,140
Non-current assets	3,421,608
Current liabilities	790,819
Non-current liabilities	2,258,089
Net cash flows from operating activities	(19,718)
Net cash flows used in investing activities	(781,869)
Net cash flows from/financing activities	(1,335,579)
Effect of foreign exchange rate changes, net	—
Net decrease in cash and cash equivalents	(2,137,166)
2019	Shanxi Zhongrun
Revenue	2,204,777
Total expenses	2,081,652
Profit for the year	123,125
Total comprehensive income for the year	123,125
Current assets	783,726
Non-current assets	4,010,818
Current liabilities	1,084,890
Non-current liabilities	2,093,735
Net cash flows from operating activities	234,014
Net cash flows used in investing activities	(402,636)
Net cash flows from financing activities	307,452
Effect of foreign exchange rate changes, net	—
Net increase in cash and cash equivalents	138,830

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37. PARTLY-OWNED SUBSIDIARIES WITH MATERIAL NON-CONTROLLING INTERESTS (CONTINUED)

The following tables illustrate the summarized financial information of the above subsidiaries. The amounts disclosed are before any inter-company eliminations: (Continued)

2018	Guizhou Huaren
Revenue	4,282,882
Total expenses	4,248,243
Profit for the year	34,639
Total comprehensive income for the year	34,639
Current assets	1,169,453
Non-current assets	3,038,875
Current liabilities	1,381,541
Non-current liabilities	1,458,995
Net cash flows from operating activities	134,781
Net cash flows used in investing activities	(510,243)
Net cash flows from/financing activities	(115,222)
Effect of foreign exchange rate changes, net	—
Net decrease in cash and cash equivalents	(490,684)
2019	Guizhou Huaren
Revenue	5,982,665
Total expenses	5,677,075
Profit for the year	305,590
Total comprehensive income for the year	305,590
Current assets	1,034,442
Non-current assets	2,650,822
Current liabilities	1,164,346
Non-current liabilities	1,006,360
Net cash flows from operating activities	565,027
Net cash flows used in investing activities	(91,319)
Net cash flows from financing activities	(354,187)
Effect of foreign exchange rate changes, net	—
Net increase in cash and cash equivalents	119,521

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38. BUSINESS COMBINATION

(a) Acquisition of 100% equity interest in Qingdao Light Metal

On December 28, 2017, Chalco Shandong, a subsidiary of the Company, entered into an equity transfer agreement with Chinalco, pursuant to which Chalco Shandong acquired 100% equity interest of Qingdao Light Metal from Chinalco. The consideration for the acquisition was RMB162 million which was determined based on the appraisal value of the 100% equity interest in Qingdao Light Metal. The Company has paid all consideration as of December 31, 2017. The transaction date was December 29, 2017 which was the date that the Group obtained control of Qingdao Light Metal. Before and after the acquisition, both Qingdao Light Metal and the Company were controlled by Chinalco, and the control was not temporary. Thus, the acquisition of 100% equity interest in Qingdao Light Metal is considered to be a business combination under common control.

The carrying amounts of the assets and liabilities of Qingdao Light Metal as at the transaction date and the comparative financial figures were as follows:

	December 31, 2016	December 29, 2017
Assets		
Investment properties	10,742	10,425
Property, plant and equipment	290,579	278,309
Land use rights	20,722	20,195
Inventories	29,446	49,489
Other current assets	2,934	3,978
Trade and notes receivables	29,748	98,957
Cash and cash equivalents	5,688	10,924
Liabilities		
Trade and notes payables	64,900	97,681
Other payables and accrued expenses	10,641	66,042
Interest-bearing loans and borrowings	167,000	167,000
Net assets	147,318	141,554
Other equity instruments	138,670	138,670
	8,648	2,884
Difference recognized in equity		158,848
Total purchase consideration		<u>161,732</u>

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38. BUSINESS COMBINATION (CONTINUED)

(b) Acquisition of Shanxi Aluminum Sewage Treatment Plant

On December 28, 2017, Shanxi New Material, a subsidiary of the Company, entered into an assets transfer agreement with Chalco Shanxi Aluminum, a subsidiary of Chinalco, pursuant to which, Shanxi New Material acquired Shanxi Aluminum Sewage Treatment Plant at a total consideration of RMB50 million. The consideration was determined based on the appraisal report issued by an independent qualified valuer. In the opinion of directors of the Company, the sewage treatment plant constitutes a business. Before and after the acquisition, both entities were controlled by Chinalco, and the control was not temporary. Thus, the acquisition is considered to be a business combination under common control. The acquisition date was December 28, 2017, which is determined by the date of transfer of the assets.

The carrying amount of the assets and liabilities of Shanxi Aluminum Sewage Treatment Plant as at the transaction date and the comparative financial figures were as follows:

	December 31, 2016	December 28, 2017
Assets		
Property, plant and equipment	52,001	48,995
Liabilities		
Other payables and accrued expenses	—	—
Net assets	52,001	48,995
Difference recognized in equity	—	1,063
Total purchase consideration		50,058

The acquisition of Shanxi Aluminum Sewage Treatment Plant has no impact on the Group's cash and cash equivalents.

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38. BUSINESS COMBINATIONS (CONTINUED)

(c) Acquisition of Yinxing Power

In April 2015, Ningxia Energy and Zhejiang Power Group Co., Ltd.* (“Zhejiang Power”) (浙江省能源集團有限公司) jointly established Ningxia Yinxing Power Co., Ltd.* (“Yinxing Power”) (寧夏銀星發電有限責任公司). The registered capital of Yinxing Power is RMB800 million, of which Ningxia Energy and Zhejiang Power contributed 51% and 49%, respectively. Ningxia Energy can appoint four out of the seven directors of the board of directors. According to the articles of association of Yinxing Power, the resolutions pertaining to significant relevant activities at both the shareholders’ and board of directors meetings require more than two-thirds of the votes for passing. Accordingly, the directors of the Company considered that Ningxia Energy and Zhejiang Power have joint control over Yinxing Power, which was accounted for as a joint venture.

In August 2017, to minimize coal procurement costs and to secure long-term coal supply to Yinxing Power, Ningxia Energy and Zhejiang Power entered into an acting-in-concert agreement which was effective on August 31, 2017. According to the acting-in-concert agreement, Zhejiang Power will exercise the shareholders vote in concert with the Group. Accordingly, the directors of the Company consider that Ningxia Energy have control over Yinxing Power and consolidated Yinxing Power as a subsidiary since August 31, 2017.

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38. BUSINESS COMBINATIONS (CONTINUED)

(c) Acquisition of Yinxing Power (Continued)

The fair value of identifiable assets and liabilities of Yinxing Power at the acquisition date are as follows:

	August 31, 2017
	Fair value
Assets	
Property, plant and equipment	3,594,970
Land use rights	31,833
Intangible assets	188
Other current assets	312,840
Inventories	35,349
Trade and notes receivables	162,093
Cash and cash equivalents	255,152
Liabilities	
Deferred tax liabilities	(40,706)
Interest-bearing loans and borrowings	(2,514,800)
Other payables and accrued expenses	(186,782)
Trade and notes payables	(800,438)
Net assets	849,699
Non-controlling interests	416,353
Net assets acquired	433,346
Goodwill	—
Satisfied by cash	—

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38. BUSINESS COMBINATIONS (CONTINUED)

(c) Acquisition of Yinxing Power (Continued)

Details of the 51% equity interest held by the Group before the acquisition of Yinxing Power and the profit from the investment are as follows:

	August 31, 2017
Initial investment cost	316,200
Investment income recognized under the equity method	(494)
The book value of the investment in 51% equity of Yinxing Power on the merger date	315,706
The fair value of the investment in 51% equity of Yinxing Power on the merger date (Note)	433,346
Gain on previously held equity interest remeasured at acquisition-date fair value	117,640

Note: The fair value was determined by the valuation report issued by an independent qualified valuer.

An analysis of the cash flows in respect of the acquisition of Yinxing Power is as follows:

	RMB'000
Cash consideration	—
Cash and bank balances acquired	255,152
Net inflow of cash and cash equivalents included in cash flows from investing activities	255,152

The operating results and cash flows of Yinxing Power since the merger date to the end of the year are as follows:

	RMB'000
Revenue	578,117
Profit for the period	96,756
Net cash flows	36,024

* The English names represent the best effort by management of the Group in translating the Chinese names of the Companies as they do not have any official English names.

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38. BUSINESS COMBINATIONS (CONTINUED)

(d) Acquisition of Guizhou Huaren

In May 2017, the Company, together with Hangzhou Jinjiang, Guizhou Investment and Qingzhen Investment jointly established Guizhou Huaren. The registered capital of Guizhou Huaren is RMB1,200 million, of which the Company holds 40% of equity interest in Guizhou Huaren, Hangzhou Jinjiang holds 30%, while each of the other two shareholders holds 15% equity interest, respectively. According to the article of association of Guizhou Huaren, the directors of the Company considered that the Company had significant influence over Guizhou Huaren, which was accounted for as an associate.

In December 2017, the Company and Hangzhou Jinjiang entered into an acting-in-concert agreement which became effective on January 1, 2018. According to the acting-in-concert agreement, Hangzhou Jinjiang agreed to exercise the board members' and shareholder's vote in concert with the Company. Accordingly, the directors of the Company considered that the Company obtains control over Guizhou Huaren and has consolidated Guizhou Huaren's financial position and performance into the Group's consolidated financial statements since January 1, 2018.

* *The English names represent the best effort by management of the Group in translating the Chinese names of the Companies as they do not have any official English names.*

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38. BUSINESS COMBINATIONS (CONTINUED)

(d) Acquisition of Guizhou Huaren (Continued)

The fair value of identifiable assets and liabilities of Guizhou Huaren at the acquisition date are as follows:

	January 1, 2018
	Fair value
Assets	
Property, plant and equipment	2,194,095
Intangible assets	137
Land use rights	109,320
Other current assets	353,655
Inventories	220,718
Trade and notes receivables	250
Restricted cash	324,030
Cash and cash equivalents	673,587
Liabilities	
Deferred tax liabilities	(58,299)
Interest-bearing loans and borrowings	(1,680,000)
Contract liabilities	(2,562)
Other payables and accrued expenses	(345,562)
Trade and notes payables	(464,454)
Net assets	1,324,915
Non-controlling interests	794,949
Share of net assets acquired	529,966
Goodwill	—
Satisfied by:	
Cash	—
Fair value of previously held equity interest	529,966
	<u>529,966</u>

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38. BUSINESS COMBINATIONS (CONTINUED)

(d) Acquisition of Guizhou Huaren (Continued)

Details of the 40% equity interest held by the Company before the acquisition of Guizhou Huaren and the profit from the investment are as follows:

	January 1, 2018
Initial investment cost	480,000
Share of loss accumulated under the equity method	<u>(18,347)</u>
Book value of the investment in 40% equity of Guizhou Huaren on the acquisition date	461,653
Fair value of the investment in 40% equity of Guizhou Huaren on the acquisition date (Note)	<u>529,966</u>
Gain on previously held equity interest remeasured at acquisition-date fair value	<u><u>68,313</u></u>

Note: The fair value was determined by the valuation report issued by an independent qualified valuer.

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38. BUSINESS COMBINATIONS (CONTINUED)

(d) Acquisition of Guizhou Huaren (Continued)

An analysis of the cash flows in respect of the acquisition of Guizhou Huaren is as follows:

	RMB'000
Cash consideration	—
Cash and bank balances acquired	673,587
Net inflow of cash and cash equivalents included in cash flows from investing activities	<u>673,587</u>

The operating results and cash flows of Guizhou Huaren since the acquisition date to December 31, 2018 are as follows:

	RMB'000
Revenue	4,282,882
Profit for the period	34,639
Net cash out flows	<u>(490,684)</u>

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38. BUSINESS COMBINATION (CONTINUED)

(e) Acquisition of Shanxi Zhongrun

In February 2017, the Company entered into a capital injection and enlargement agreement on Shanxi Zhongrun with Huarun (Coal) Group Co., Ltd.* (“Huarun (Coal) Group”) (華潤(煤業)集團有限公司), Shanxi Xishan Coal and Electricity Power Co., Ltd.* (“Xishan Coal Electricity”) (山西西山煤電股份有限公司) and Jin Energy Power Group Co., Ltd.* (“Jin Energy Power”) (晉能電力集團有限公司). After the capital contribution, the registered capital of Shanxi Zhongrun is RMB500 million, of which the Company holds 40% of equity interest in Shanxi Zhongrun while each of the other three shareholders holds a 20% equity interest, respectively. The Company can appoint two out of the five directors of the board of directors. According to the article of association of Shanxi Zhongrun and the agreement, the directors of the Company considered that the Company had significant influence over Shanxi Zhongrun, which was accounted for as an associate.

In December 2017, the Company and Huarun (Coal) Group entered into an acting-in-concert agreement which was effective on January 1, 2018. According to the acting-in-concert agreement, Huarun (Coal) Group agreed to exercise the board members’ and shareholder’s vote in concert with the Company. Accordingly, the directors of the Company considered that the Company obtains control over Shanxi Zhongrun and has consolidated Shanxi Zhongrun’s financial position and performance into the Group’s consolidated financial statements since January 1, 2018.

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38. BUSINESS COMBINATION (CONTINUED)

(e) Acquisition of Shanxi Zhongrun (Continued)

The fair value of identifiable assets and liabilities of Shanxi Zhongrun at the acquisition date are as follows:

	January 1, 2018
	Fair value
Assets	
Property, plant and equipment	2,292,483
Intangible assets	749
Other current assets	215,575
Inventories	15,473
Trade and notes receivables	4,135
Cash and cash equivalents	2,173,062
Liabilities	
Deferred tax liabilities	(41,581)
Interest-bearing loans and borrowings	(3,485,852)
Other payables and accrued expenses	(37,789)
Trade and notes payables	(13,778)
Net assets	1,122,477
Non-controlling interests	673,486
Share of net assets acquired	448,991
Goodwill	—
Satisfied by:	
Cash	—
Fair value of previously held equity interest	448,991
	<u>448,991</u>

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38. BUSINESS COMBINATION (CONTINUED)

(e) Acquisition of Shanxi Zhongrun (Continued)

Details of the 40% equity interest held by the Company before the acquisition of Shanxi Zhongrun and the profit from the investment are as follows:

	January 1, 2018
Initial investment cost	400,184
Share of loss accumulated under the equity method	<u>(6,553)</u>
Book value of the investment in 40% equity of Shanxi Zhongrun on the acquisition date	393,631
Fair value of the investment in 40% equity of Shanxi Zhongrun on the acquisition date (Note)	<u>448,991</u>
Gain on previously held equity interest remeasured at acquisition-date fair value	<u><u>55,360</u></u>

Note: The fair value was determined by the valuation report issued by an independent qualified valuer.

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38. BUSINESS COMBINATION (CONTINUED)

- (e) Acquisition of Shanxi Zhongrun (Continued)

An analysis of the cash flows in respect of the acquisition of Shanxi Zhongrun is as follows:

	RMB'000
Cash consideration	—
Cash and bank balances acquired	2,173,062
Net inflow of cash and cash equivalents included in cash flows from investing activities	<u>2,173,062</u>

The operating results and cash flows of Shanxi Zhongrun since the acquisition date to December 31, 2018 are as follows:

	RMB'000
Revenue	645,214
Profit for the period	817
Net cash out flows	<u>(2,137,166)</u>

* The English names represent the best effort made by management of the Group in translating their Chinese names as the companies do not have any official English names.

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38. BUSINESS COMBINATIONS (CONTINUED)

(f) Acquisition of Shanxi Huaxing

On December 31, 2017, the Company, Chalco Hong Kong and Baotou Communication Investment held 10%, 40% and 50% of the shares of Shanxi Huaxing, respectively. According to the articles of association of Shanxi Huaxing, the Group can exercise joint control over Shanxi Huaxing and therefore, which was accounted for as a joint venture accordingly.

In December 2018, the Company entered into an equity transfer agreement with Baotou Communication Investment. According to the agreement, the Company acquired 50% of Shanxi Huaxing's equity with a consideration at RMB2,665 million in cash. Upon completion of the transaction, the Group held a total of 100% of Shanxi Huaxing's shares. The directors of the Company considered that the Company obtains control over Shanxi Huaxing and has consolidated Shanxi Huaxing's financial position and performance into the Group's consolidated financial statements since the acquisition date of December 6, 2018.

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38. BUSINESS COMBINATIONS (CONTINUED)

(f) Acquisition of Shanxi Huaxing (Continued)

The fair value of identifiable assets and liabilities of Shanxi Huaxing at the acquisition date are as follows:

	December 6, 2018
	Fair value
Assets	
Property, plant and equipment	7,327,807
Intangible assets	728,067
Land use right	348,901
Deferred tax assets	8,094
Other non-current assets	60,336
Other current assets	102,396
Inventories	865,418
Trade and notes receivables	44,706
Restricted cash	203,350
Cash and cash equivalents	81,344
Liabilities	
Deferred tax liabilities	(722,349)
Interest-bearing loans and borrowings	(1,743,036)
Other non-current liabilities	(239,998)
Contract liabilities	(617,827)
Other payables and accrued expenses	(686,024)
Trade and notes payables	(1,594,724)
Net assets	4,166,461
Non-controlling interests	—
Share of net assets acquired	4,166,461
Goodwill	1,163,949
Satisfied by:	
Cash	2,665,205
Fair value of previously held equity interest	2,665,205
	<u>5,330,410</u>

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38. BUSINESS COMBINATION (CONTINUED)

(f) Acquisition of Shanxi Huaxing (Continued)

Details of the 50% equity interest held by the Group before the acquisition of Shanxi Huaxing and the profit from the investment are as follows:

	December 6, 2018
Initial investment cost	2,351,479
Share of loss accumulated under the equity method	(77,309)
Share of changes in reserves under the equity method	11,166
Cash dividends declared	<u>(236,556)</u>
Book value of the investment in 50% equity of Shanxi Huaxing on the acquisition date	2,048,780
Fair value of the investment in 50% equity of Shanxi Huaxing on the acquisition date (Note)	<u>2,665,205</u>
Gain on previously held equity interest remeasured at acquisition-date fair value	<u>616,425</u>

Note: The fair value was determined by the valuation report issued by an independent qualified valuer.

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38. BUSINESS COMBINATION (CONTINUED)

(f) Acquisition of Shanxi Huaxing (Continued)

An analysis of the cash flows in respect of the acquisition of Shanxi Huaxing is as follows:

	RMB'000
Cash consideration	(2,665,205)
Cash and bank balances acquired	81,344
Net outflow of cash and cash equivalents included in cash flows from investing activities	<u>(2,583,861)</u>

The operating results and cash flows of Shanxi Huaxing since the acquisition date to December 31, 2018 are as follows:

	RMB'000
Revenue	415,509
Profit for the period	110,917
Net cash out flows	<u>(434)</u>

* The English names represent the best effort made by management of the Group in translating their Chinese names as the companies do not have any official English names.

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38. BUSINESS COMBINATION (CONTINUED)

(g) Acquisition of Shandong Aluminum Carbon Plant

On August 31, 2018, Chalco Shandong, a subsidiary of the Company, entered into an asset transfer agreement with Shandong Aluminum Plant, pursuant to which, Chalco Shandong acquired Shandong Aluminum Carbon Plant from Shandong Aluminum at a total consideration of RMB146 million. The consideration was determined based on the appraisal report issued by an independent qualified valuer. Chalco Shandong has paid all consideration as of December 31, 2018. In the opinion of the directors of the Company, Shandong Aluminum Carbon Plant constitutes a business. Before and after the acquisition, Chalco Shandong and Shandong Aluminum were controlled by Chinalco, and the control was not temporary. As such, the acquisition is considered to be a business combination under common control. The acquisition date was August 31, 2018, which is determined by the date of transfer of the assets.

The carrying amounts of the assets and liabilities of Shandong Aluminum Carbon Plant as at the transaction date and the comparative financial figures were as follows:

	December 31, 2017	August 31, 2018
Assets		
Property, plant and equipment	24,393	23,845
Inventories	51,104	46,150
Other current assets	418	411
Trade and notes receivables	23,052	44,522
Cash and cash equivalents	34,354	—
Liabilities		
Trade and notes payables	(12,235)	(24,011)
Contract liabilities	—	(1,432)
Other payables and accrued expenses	(38,415)	(1,542)
Net assets	82,671	87,943
Difference recognized in equity		58,319
Total purchase consideration		<u>146,262</u>

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38. BUSINESS COMBINATION (CONTINUED)

(h) Acquisition of Pingguo Aluminum Carbon Plant

On August 30, 2018, Guangxi Branch of the Company entered into an asset transfer agreement with Pingguo Aluminum, pursuant to which, Guangxi Branch of the Company acquired Pingguo Aluminum Carbon Plant from Pingguo Aluminum at a total consideration of RMB92 million. The consideration was determined based on the appraisal report issued by an independent qualified valuer. Guangxi Branch of the Company has paid all consideration as of December 31, 2018. In the opinion of the directors of the Company, the Pingguo Aluminum Carbon Plant constitutes a business. Before and after the acquisition, Guangxi Branch and Pingguo Aluminum were controlled by Chinalco, and the control was not temporary. As such, the acquisition is considered to be a business combination under common control. The acquisition date was August 30, 2018, which is determined by the date of transfer of the assets.

The carrying amounts of the assets and liabilities of Pingguo Aluminum Carbon Plant as at the transaction date and the comparative financial figures were as follows:

	December 31, 2017	August 30, 2018
Assets		
Property, plant and equipment	35,201	127,315
Trade and notes receivables	12,143	—
Inventories	90,581	71,264
Liabilities		
Trade and notes payables	(69,521)	(117,749)
Net assets	68,404	80,830
Difference recognized in equity		11,218
Total purchase consideration		<u>92,048</u>

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38. BUSINESS COMBINATION (CONTINUED)

(i) Acquisition of Chibi Great Wall Carbon

On August 30, 2018, Chalco Mining, a subsidiary of the Company, entered into an equity transfer agreement with China Great Wall Aluminum and Henan Great Wall Zhongxin, pursuant to which, Chalco Mining acquired 57.69% and 19.96% equity interest in Red Chibi Great Wall from China Great Wall Aluminum and Henan Great Wall Zhongxin, respectively. The consideration for the acquisition was RMB202 million, which was determined based on the appraisal value of the 77.65% equity interest in Chibi Great Wall Carbon. As at December 31, 2018, Chalco Mining has paid the consideration in receivables amounting to RMB70 million and cash amounting to RMB132 million, respectively. The transaction date was August 30, 2018, which was the date that the Group obtained control of Chibi Great Wall Carbon. Before and after the acquisition, both Chibi Great Wall Carbon and Chalco Mining were controlled by Chinalco, and the control was not temporary. Thus, the acquisition of the 77.65% equity interest in Chibi Great Wall Carbon is considered to be a business combination under common control.

The carrying amounts of the assets and liabilities of Red Cliff Carbon as at the transaction date and the comparative financial figures were as follows:

	December 31, 2017	August 30, 2018
Assets		
Property, plant and equipment	271,604	379,618
Land use rights	26,124	25,731
Deferred tax assets	3,325	3,325
Inventories	59,035	65,440
Other current assets	11,095	18,608
Trade and notes receivables	32,880	53,392
Restricted Cash	15,700	—
Cash and cash equivalents	50,545	16,258
Liabilities		
Interest-bearing loans and borrowings	(228,500)	(233,000)
Contract liabilities	—	(1,816)
Trade and notes payables	(46,702)	(56,970)
Other payables and accrued expenses	(51,595)	(52,114)
Income tax payable	(2,927)	—
Other non-current liabilities	(69,640)	(65,901)
Net assets	70,944	152,571
Non-controlling interests	(15,856)	(34,100)
Difference recognized in equity		83,497
Total purchase consideration		<u>201,968</u>

ALUMINUM CORPORATION OF CHINA LIMITED
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38. BUSINESS COMBINATION (CONTINUED)

(j) Acquisition of Longhua Logistics

On August 30, 2018, China Aluminum Logistics Group Corporation Co., Ltd. (“China Aluminum Logistics Group”) (“中鋁物流集團有限公司”), a subsidiary of the Company, entered into an equity transfer agreement with Northeast Light Alloy Co., Ltd., pursuant to which, Chalco Aluminum Logistics acquired a 51% equity interest in East Light Logistics from Northeast Light Alloy Co., Ltd. The consideration for the acquisition was RMB3 million, which was determined based on the appraisal value of the 51% equity interest in East Light Logistics and China Aluminum Logistics Group has paid all consideration as of December 31, 2018. The transaction date was August 30, 2018, which was the date that the Group obtained control of East Light Logistics. Before and after the acquisition, both East Light Logistics and China Aluminum Logistics Group were controlled by Chinalco, and the control was not temporary. As such, the acquisition of the 51% equity interest in East Light Logistics is considered to be a business combination under common control.

The carrying amount of the assets and liabilities of East Light Logistics as at the transaction date and the comparative financial figures were as follows:

	December 31, 2017	September 17, 2018
Assets		
Property, plant and equipment	2,901	3,839
Inventories	127	2,207
Other current assets	200	608
Trade and notes receivables	6,704	6,828
Cash and cash equivalents	281	403
Liabilities		
Trade and notes payables	(2,062)	(4,647)
Contract liabilities	—	(1,504)
Income tax payable	(130)	—
Other payables and accrued expenses	(1,323)	(2,065)
Net assets	6,698	5,669
Non-controlling interests	(3,281)	(2,778)
Net assets acquired		2,891
Difference recognized in equity		413
Total purchase consideration		3,304

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38. BUSINESS COMBINATION (CONTINUED)

(k) Acquisition of Suzhou Zhongcai

On April 29, 2019, Chinalco Shanghai Company Limited (“Chinalco Shanghai”) (“中鋁上海有限公司”), a subsidiary of the Company, entered into an equity transfer agreement with Zhongse Technology Co., Ltd.* (“Zhongse Technology”) (“中色科技股份有限公司”) and Suzhou Research Institute of Non-ferrous Metals Co., Ltd.* (“Suzhou Research Institute”) (“蘇州有色金屬研究院有限公司”), pursuant to which, Chinalco Shanghai acquired 70% and 30% equity interests in Suzhou Zhongse Metal Materials Technology Co., Ltd.* (“Suzhou Zhongcai”) (“蘇州中色金屬材料科技有限公司”) from Zhongse Technology and Suzhou Research Institute, respectively. The consideration for the acquisition was RMB237 thousand, which was determined based on the appraisal value of the 100% equity interest in Suzhou Zhongcai. Chinalco Shanghai has paid the consideration in full as of June 30, 2019. The acquisition date was June 1, 2019, which was the date that the Group obtained control of Suzhou Zhongcai. Before and after the acquisition, both Suzhou Zhongcai and Chinalco Shanghai were controlled by Chinalco, and the control was not temporary. Thus, the acquisition of the 100% equity interest in Suzhou Zhongcai is considered to be a business combination under common control, other than significant influence or joint control.

The carrying amounts of the assets and liabilities of Suzhou Zhongcai as at the acquisition date and the comparative financial figures were as follows:

	December 31, 2018	June 1, 2019
Assets		
Property, plant and equipment	55,747	55,746
Land use rights	26,574	—
Right-of-use assets	—	26,318
Other current assets	2,561	2,229
Deferred tax assets	86	143
Trade and notes receivables	3,485	2,758
Cash and cash equivalents	183	136
Liabilities		
Deferred tax liabilities	111	—
Interest-bearing loans and borrowings	51,908	51,908
Other payables and accrued expenses	34,536	33,404
Trade and notes payables	1,664	1,564
Net assets	417	454
Non-controlling interests	—	—
Net assets acquired		<u>454</u>
Difference recognized in equity		<u>(217)</u>
Total purchase consideration		<u>237</u>

* The English names represent the best effort made by the management of the Group in translating their Chinese names as the companies do not have any official English names.

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39. DISPOSAL OF BUSINESSES

(a) Disposal of Shandong Engineering

On October 31, 2017, the Company and CHALIECO entered into an equity transfer agreement, pursuant to which the Company agreed to sell and CHALIECO agreed to acquire 60% equity interest in Shandong Engineering at a consideration of RMB360 million. The consideration was determined based on the appraised value of the 60% equity interest in Shandong Engineering. Full consideration has been received by the Group in November 2017.

The directors of the Company are of the opinion that the Group lost control over Shandong Engineering and accounted for it as an associate accordingly. As of the date of disposal, the carrying amount of Shandong Engineering was RMB350 million, and the Group recognized gain of disposal of subsidiary of RMB153 million for 60% equity interests disposed of. The Group re-measured the remaining 40% equity interest of Shandong Engineering to a fair value of RMB240 million and recognized the fair value gain of RMB102 million accordingly. In addition, unrealized profit arisen from construction services provided by Shandong Engineering previously eliminated upon consolidation amounting to RMB59 million was reversed and recognized in other gains.

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39. DISPOSAL OF BUSINESSES (CONTINUED)

(a) Disposal of Shandong Engineering (Continued)

The details of the net assets disposed of are as follows:

	Date of disposal
Net assets disposed of:	
Property, plant and equipment	109,103
Intangible assets	428
Deferred tax assets	3,106
Inventories	167,499
Trade receivables and notes receivable	1,067,636
Other current assets	23,136
Cash and cash equivalents	123,530
Other non-current liabilities	(4,637)
Other payables and accrued liabilities	(282,232)
Trade and notes payables	(727,622)
Interest-bearing loans and borrowings	(130,000)
Net assets	349,947
Non-controlling interests	3,961
Total net assets	345,986
Gain on disposal of Shandong Engineering	254,659
The fair value of the remaining equity interest in Shandong Engineering	240,258
Consideration	360,387
Satisfied by:	
Cash	387
Notes receivable	360,000

An analysis of the cash flow of cash and cash equivalents in respect of the Disposal of Shandong Engineering is as follows:

	Date of disposal
Cash consideration received	387
Cash and bank balances disposed of	(123,530)
Net outflows of cash and cash equivalents in respect of disposal of Shandong Engineering	(123,143)

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39. DISPOSAL OF BUSINESSES (CONTINUED)

(b) Deemed disposal of Shanxi Zhongrun

The Company previously had a 50% equity interest in Shanxi China Huarun Co., Ltd.* (“Shanxi Zhongrun”) (山西中鋁華潤有限公司). According to the then acting-in-concert agreement entered into by the Company and the other shareholders of Shanxi Zhongrun, Huarun (Coal) Group Co., Ltd.* (“Huarun (Coal) Group”) (華潤(煤業)集團有限公司), Huarun (Coal) Group agreed to confer its voting rights in the shareholders’ meeting of Shanxi Zhongrun to the Company. Accordingly, the directors of the Company considered that the Company had control over Shanxi Zhongrun and included Shanxi Zhongrun in the consolidation scope.

On February 15, 2017, the Company entered into a capital injection and enlargement agreement on Shanxi Zhongrun with Huarun (Coal) Group, Shanxi Xishan Coal and Electricity Power Co., Ltd.* (“Xishan Coal Electricity”) (西山煤電), and Jin Energy Power Group Co., Ltd.* (“Jin Energy Power”) (晉能電力). Pursuant to the agreement, the Company, Xishan Coal Electricity and Jin Energy Power had each subscribed RMB100 million, respectively. After the capital contribution, the Company’s equity interest in Shanxi Zhongrun decreased to 40% while each of the other three shareholders hold a 20% equity interest, respectively, and the acting-in-concert agreement between the Company and Huarun (Coal) Group also ceased to be effective since then. The directors of the Company are of the opinion that the Group lost control over Shanxi Zhongrun and accounted for it as an associate accordingly. As of the date of deemed disposal, the Company re-measured the 40% equity of Shanxi Zhongrun to a fair value of RMB100 million and recognized the fair value gain of RMB4 million accordingly.

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39. DISPOSAL OF BUSINESSES (CONTINUED)

(c) Disposal of Zibo Trading

In November 2017, Chalco Trading, a subsidiary of the Company, agreed to transfer 50% equity interest in Zibo International Trading Co. Ltd. * (“Zibo Trading”) (“淄博國貿”) to a third party. The directors of the Company are of the opinion that the Group lost control over Zibo Trading and accounted for it as a joint venture accordingly. As of the date of disposal, the Group recognized loss of disposal of subsidiary of RMB2 million for 50% equity interest disposed of. The Group re-measured the 50% equity of Zibo Trading to a fair value of RMB12 million and recognized the fair value loss of RMB2 million accordingly.

(d) Bankruptcy liquidation of Longmen Aluminum

In September 2017, Shanxi Hejin People’s Court accepted the liquidation petition filed by the Group’s subsidiary, Shanxi Longmen Aluminum Co., Ltd. (“Longmen Aluminum”) (山西龍門鋁業有限公司). Upon the liquidation, administrators took control over Longmen Aluminum, the directors of the Company considered the Company lost control over Longmen Aluminum and therefore, ceased to consolidate Longmen Aluminum since then. The Group recognized a loss of RMB26 million for lost control over Longmen Aluminum.

(e) Bankruptcy liquidation of Beijing Yike

In September 2017, Beijing Shijingshan People’s Court accepted the liquidation petition filed by the Group’s subsidiary, Beijing Yike. Upon the liquidation, administrators took control over Beijing Yike, and therefore, the directors of the Company considered the Group lost control over Beijing Yike and deconsolidated Beijing Yike since then. The Group recognized a gain of RMB38 million upon the deconsolidation of Beijing Yike.

(f) Disposal of Zhengzhou Chalco Longyu Mining Co., Ltd.

In August 2018, Chalco Trading, a subsidiary of the Company, agreed to transfer a 51% equity interest in Zhengzhou Chalco Longyu Mining Co., Ltd.* (“Longyu Mining”) (“鄭州中鋁龍宇礦業有限公司”) to a third party. As of the date of disposal, the Group recognized a gain of disposal of subsidiary of RMB8 million.

(g) Bankruptcy liquidation of Shanxi Huatai Carbon Co., Ltd.

In March 2018, Shanxi Jiexiu People’s Court accepted the liquidation petition filed by the Group’s subsidiary, Shanxi Huatai Carbon Co., Ltd.* (“山西華泰碳素有限責任公司”). Upon the liquidation, administrators took control over Shanxi Huatai Carbon Co., Ltd., and the directors of the Company considered that the Company lost control over Shanxi Huatai Carbon Co., Ltd. and therefore, ceased to consolidate Shanxi Huatai Carbon Co., Ltd. since then. The Group recognized a loss of RMB2 million for lost control over Shanxi Huatai Carbon Co., Ltd.

(h) Bankruptcy liquidation of Hedong Carbon Co., Ltd.

In June 2018, Shanxi Hejin People’s Court accepted the liquidation petition filed by the Group’s subsidiary, Hedong Carbon Co., Ltd.* (“河東碳素”). Upon the liquidation, administrators took control over Hedong Carbon Co., Ltd., and the directors of the Company considered that the Company lost control over Hedong Carbon Co., Ltd. and therefore, ceased to consolidate Hedong Carbon Co., Ltd. since then. The Group recognized a loss of RMB2 million for lost control over Hedong Carbon Co., Ltd.

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39. DISPOSAL OF BUSINESSES (CONTINUED)

- (i) Disposal of 100% equity of China Aluminum Nanhai Alloy

In January 2019, the Company entered into a Capital Contribution Agreement with Chinalco and its subsidiary Chinalco Innovative, pursuant to which the Company shall make a capital contribution to Chinalco Innovative in form of its 100% equity interests in China Aluminum Nanhai Alloy Co., Ltd. ("China Aluminum Nanhai Alloy"). After the transaction, the Company holds 19.4852% in Chinalco Innovative. As of the date of deemed disposal, the Company re-measured the equity of China Aluminum Nanhai Alloy to a fair value of RMB350 million and recognized the fair value gain of RMB258 million accordingly.

- (j) Disposal of 40% equity interest of Inner Mongolia Fengrong and disposal of 60% equity interest of Ningxia Fenghao

On February 20, 2019, Chalco Energy Co., Ltd., a wholly-owned subsidiary of the Company, entered into equity transfer agreements with Chinalco Environment Protection Co., Ltd. on the partial disposal of 40% equity interests in Inner Mongolia Fengrong Co., Ltd. and 60% equity interests in Ningxia Fenghao Co., Ltd., respectively. A gain of RMB3,014 thousands from partial disposal of the two subsidiaries was recorded by the Group in the current period.

- (k) Deregistration of Shanghai Kailin

Chalco Trade, a subsidiary of the Company, held 100% equity interest of Shanghai Chalco Kailin Aluminum Co., Ltd. * (上海中鋁凱林鋁業有限公司) ("Shanghai Kailin"). In July 2019, Shanghai Kailin was deregistered, from which the Company recorded a gain of RMB160 thousands.

- (l) Disposal of Ruzhou Jinhua

Zhongzhou Aluminum, a subsidiary of the Company, held a 51% equity interest in Ruzhou Chinalco Jinhua Mining Co., Ltd. * (汝州中鋁金華礦業有限公司) ("Ruzhou Jinhua"). In July 2019, Zhongzhou Aluminum disposed all of its equity interests of Ruzhou Jinhua, and a gain of RMB113 thousands from the disposal was included in other gains during the year ended December 31, 2019.

* The English names represent the best effort made by management of the Group translating the Chinese names of the Companies as the companies do not have any official English names.

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40. OTHER EQUITY INSTRUMENTS

On October 22, 2013, a subsidiary of the Company, Chalco Hong Kong Investment Company Limited (“Chalco Hong Kong Investment”, or the “Issuer”) issued USD350 million senior perpetual securities at an initial distribution rate of 6.625% (the “2013 Senior Perpetual Securities”). The proceeds from the issuance of the 2013 Senior Perpetual Securities after the issuance costs amounted to USD347 million (equivalent to RMB2,123 million). The proceeds were on-lent to the Company and any of its subsidiaries for general corporate use. Coupon payments at 6.625% per annum on the 2013 Senior Perpetual Securities have been made semi-annually in arrears from October 29, 2013 and may be deferred at the discretion of the Group. The 2013 Senior Perpetual Securities have no fixed maturity dates and are callable only at the Group’s option on or after October 29, 2018 at their principal amounts together with any accrued, unpaid or deferred coupon distribution payments. After October 29, 2018, the coupon distribution rate will be reset to a percentage per annum equal to the sum of (a) the initial spread of 5.312 percent, (b) the U.S. Treasury Rate, and (c) a margin of 5.00 percent per annum. While any coupon distribution payments are unpaid or deferred, the Company and Chalco Hong Kong as guarantors, and the Issuer cannot declare or pay dividends or make distributions or similar discretionary payments in respect of, or repurchase, redeem or otherwise acquire any securities of lower or equal rank.

On October 31, 2018, the Group redeemed the senior perpetual security, and paid \$373 million in principal and interest, approximately RMB2,592 million.

On October 27, 2015, the Company issued RMB2,000 million perpetual medium-term notes with an initial distribution rate at 5.50% (the “2015 Perpetual Medium-term Notes”). The proceeds from the issuance of the 2015 Perpetual Medium-term Notes were RMB2,000 million. The proceeds were used for the repayment of interest-bearing loans and borrowings. Coupon payments at 5.50% per annum on the 2015 Perpetual Medium-term Notes have been made annually in arrears from October 29, 2015 and may be deferred at the discretion of the Company. The 2015 Perpetual Medium-term Notes have no fixed maturity date and are callable only at the Group’s option on October 29, 2020 or any coupon distribution date after October 29, 2020 at their principal amounts together with any accrued, unpaid or deferred coupon distribution payments. The coupon distribution rate will be reset to a percentage per annum equal to the sum of (a) the initial spread of 2.61 percent, (b) the China Treasury Rate, and (c) a margin of maximum 300 Bps every five years after October 29, 2020. While any coupon distribution payments are unpaid or deferred, the Company cannot declare or pay dividends to shareholders or decrease the share capital, or make material fixed asset investments.

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40. OTHER EQUITY INSTRUMENTS (CONTINUED)

On October 31, 2016, Chalco Hong Kong Investment issued USD500 million senior perpetual securities with an initial distribution rate at 4.25% (the “2016 Senior Perpetual Securities”). The proceeds from the issuance of the 2016 Senior Perpetual Securities after the issuance costs were USD498 million (equivalent to RMB3,374 million). The proceeds were on-lent to the Company and any of its subsidiaries for general corporate use. Coupon payments at 4.25% per annum on the 2016 Senior Perpetual Securities have been made semi-annually on April 29 and October 29, in arrears from November 7, 2016 and may be deferred at the discretion of the Group. The first coupon payment date was April 29, 2017. The 2016 Senior Perpetual Securities have no fixed maturity date and are callable only at the Group’s option on or after November 7, 2021 at their principal amounts together with any accrued, unpaid or deferred coupon distribution payments. After November 7, 2021, the coupon distribution rate will be reset to a percentage per annum equal to the sum of (a) the initial spread of 2.931 percent, (b) the U.S. Treasury Rate, and (c) a margin of 5.00 percent per annum. While any coupon distribution payments are unpaid or deferred, the Group, the wholly-owned subsidiaries of Chalco Hong Kong as guarantors, and the Issuer cannot declare or pay dividends or make distributions or similar discretionary payments in respect of, or repurchase, redeem or otherwise acquire any securities of lower or equal rank.

On October 19, 2018, the Company issued RMB2,000 million perpetual medium-term notes with an initial distribution rate at 5.10% (the “2018 Perpetual Medium-term Notes”). The proceeds from the issuance of the 2018 Perpetual Medium-term Notes were RMB2,000 million. The proceeds were used for the repayment of interest-bearing loans and borrowings. Coupon payments of 5.10% per annum on the 2018 Perpetual Medium-term Notes have been made annually in arrears from October 19, 2018 and may be deferred at the discretion of the Company. The 2018 Perpetual Medium-term Notes have no fixed maturity date and are callable only at the Group’s option on October 23, 2021 or any coupon distribution date after October 23, 2021 at their principal amounts together with any accrued, unpaid or deferred coupon distribution payments. The coupon distribution rate will be reset to a percentage per annum equal to the sum of (a) the initial spread of 2.61 percent, (b) the China Treasury Rate, and (c) a margin of maximum 500 Bps every five years after October 23, 2021. While any coupon distribution payments are unpaid or deferred, the Company cannot declare or pay dividends to shareholders or decrease the share capital, or make material fixed asset investments.

On November 19, 2019, the Company issued RMB1,500 million perpetual medium-term notes with an initial distribution rate at 4.20% (the “2019 Perpetual Medium-term Notes”). The proceeds from the issuance of the 2019 Perpetual Medium-term Notes were RMB1,499 million. The proceeds were used for the repayment of interest-bearing loans and borrowings. Coupon payments of 4.20% per annum on the 2019 Perpetual Medium-term Notes have been made annually in arrears from November 19, 2019 and may be deferred at the discretion of the Company. The 2019 Perpetual Medium-term Notes have no fixed maturity date and are callable only at the Group’s option on November 20, 2022 or any coupon distribution date after November 20, 2022 at their principal amounts together with any accrued, unpaid or deferred coupon distribution payments. The coupon distribution rate will be reset to a percentage per annum equal to the sum of (a) the initial spread of 1.31 percent, (b) the China Treasury Rate, and (c) a margin of maximum 300 Bps every five years after November 20, 2022. While any coupon distribution payments are unpaid or deferred, the Company cannot declare or pay dividends to shareholders or decrease the share capital, or make material fixed asset investments.

Pursuant to the terms and conditions of the 2013 Senior Perpetual Securities, the 2016 Senior Perpetual Securities, the 2018 Perpetual Medium-term Notes and the 2019 Perpetual Medium-term Notes, the Group has no contractual obligations to repay their principal or to pay any coupon distributions. Thus, in the opinion of the directors of the Company, they do not meet the definition of financial liabilities according to IAS 32 *Financial Instruments: Presentation*, and are classified as equity and subsequent distributions declared will be treated as distributions to equity owners.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

41. CONTINGENT LIABILITIES

The Group was sued in the second quarter of 2019 against the project construction, financing arrangement and others, collectively aggregating to RMB591 million, which mainly arose from contract variation orders without merits and disagreed by the Group. As an administrative process, the local courts held to freeze the Group's bank accounts or other equivalent assets amounting to RMB214 million. As at December 31, 2019 and as at the date of approval of these financial statements, the local courts have already frozen several bank accounts of the Group aggregating to RMB61 million and a real estate of the Group of a net book value amounting to RMB46 million. Currently the lawsuits are in progress and the outcomes are unknown. The directors, based on the advice from the Group's legal counsels, believe that the Group has valid defence against all the allegations and accordingly, have not provided for any claim arising from the litigations, other than the related legal and other costs.

42. COMMITMENTS

(a) Capital commitments on property, plant and equipment

	December 31, 2018	December 31, 2019
Contracted, but not provided for	<u>3,942,933</u>	<u>4,041,857</u>

(b) Operating lease commitments as at December 31, 2018

The future aggregate minimum lease payments as at December 31, 2018 pursuant to non-cancellable lease agreements entered into by the Group are summarized as follows:

	December 31, 2018
Within one year	541,541
In the second to fifth years, inclusive	1,880,058
After five years	<u>10,567,925</u>
	<u>12,989,524</u>

(c) Other capital commitments

As at December 31, 2019, the commitments to make capital contributions to the Group's joint ventures and associates were as follows:

	December 31, 2018	December 31, 2019
Associates	82,800	33,800
Joint ventures	<u>460,000</u>	<u>410,000</u>
	<u>542,800</u>	<u>443,800</u>

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

43. EVENTS AFTER THE REPORTING PERIOD

- (a) On January 13, 2020, the Group completed an issuance of short-term bonds with a total face value of RMB1.5 billion at par value of RMB100.00 per unit which will mature in April 2020 for working capital needs and repayment of bank borrowings. The fixed annual coupon interest rate of these bonds is 2.10%.
- (b) On January 15, 2020, the Group completed an issuance of short-term bonds with a total face value of RMB2 billion at par value of RMB100.00 per unit which will mature in April 2020 for working capital needs and repayment of bank borrowings. The fixed annual coupon interest rate of these bonds is 2.20%.
- (c) On February 13, 2020, the Group completed an issuance of short-term bonds with a total face value of RMB1 billion at par value of RMB100.00 per unit which will mature in May 2020 for working capital needs and repayment of bank borrowings. The fixed annual coupon interest rate of these bonds is 2.10%.
- (d) On February 20, 2020, the Group completed an issuance of short-term bonds with a total face value of RMB1 billion at par value of RMB100.00 per unit which will mature in November 2020 for working capital needs and repayment of bank borrowings. The fixed annual coupon interest rate of these bonds is 2.50%.
- (e) On February 21, 2020, the Group completed an issuance of short-term bonds with a total face value of RMB1 billion at par value of RMB100.00 per unit which will mature in May 2020 for working capital needs and repayment of bank borrowings. The fixed annual coupon interest rate of these bonds is 2.20%.
- (f) On March 5, 2020, the Group completed an issuance of corporate bonds with a total face value of RMB0.5 billion at par value of RMB100.00 per unit which will mature in March 2025 for working capital needs and repayment of bank borrowings. The fixed annual coupon interest rate of these bonds is 3.30%.
- (g) On March 13, 2020, the Group completed an issuance of short-term bonds with a total face value of RMB1.8 billion at par value of RMB100.00 per unit which will mature in September 2020 for working capital needs and repayment of bank borrowings. The fixed annual coupon interest rate of these bonds is 2.20%.
- (h) On March 20, 2020, the Group completed an issuance of corporate bonds with a total face value of RMB1 billion at par value of RMB100.00 per unit which will mature in March 2023 for working capital needs and repayment of bank borrowings. The fixed annual coupon interest rate of these bonds is 3.05%.
- (i) On March 26, 2020, the Group completed an issuance of medium-term notes with a total face value of RMB0.9 billion at par value of RMB100.00 per unit which will mature in March 2023 for working capital needs and repayment of bank borrowings. The fixed annual coupon interest rate of these bonds is 2.93%.
- (j) The outbreak of the novel coronavirus (COVID-19) in the PRC since January 2020, the prevention and control of COVID-19 has continued. The Group has taken all possible effective measures to limit and keep the impact in control. The Group will follow and strengthen its support to the government's requirements on COVID-19 prevention and control work. COVID-19 has significant impacts on production, consumption and investment. It is expected that the aluminum industry will face greater challenges as well as greater opportunities. The Group will continue to pay close attention to and evaluate the developments of COVID-19 and market changes, and actively respond to the possible impact on the Group's financial situation and operating results. Because of the significant uncertainties surrounding the COVID-19 outbreak, the extent of the business disruption and the related financial impact cannot be reasonably estimated at this time.

ALUMINUM CORPORATION OF CHINA LIMITED
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

For the years ended December 31, 2017, 2018 and 2019

(Amounts expressed in thousands of RMB unless otherwise stated)

44. COMPARATIVE AMOUNTS

Certain comparative amounts have been restated as a result of the business combinations under common control as disclosed in note 38.

The comparative consolidated statements of cash flows for the years ended December 31, 2017 have been revised to reclassify the cash outflows for the purchase of non-controlling interests and business combination under common control from investing activities to financing activities in accordance with IAS 7 *Statement of Cash Flows*. This change did not impact the consolidated statement of financial position or consolidated statement of profit or loss and other comprehensive income for the prior periods.

45. APPROVAL OF THE FINANCIAL STATEMENTS

The financial statements were approved and authorized for issue by the board of directors on April 22, 2020.

Important Note: The following is an English translation of the Chinese version of the Articles of Association of Aluminum Corporation of China Limited (中國鋁業股份有限公司章程). In case of any discrepancies or inconsistencies, the Chinese version shall always prevail.

ARTICLES OF ASSOCIATION

OF

Aluminum Corporation of China Limited

(Adopted at the Extraordinary Shareholders' General Meeting of the Company on September 24, 2001) (Approved by the State Economic and Trade Commission on September 26, 2001)
(Amended with the Approval of the Shareholders' General Meeting of the Company on June 12, 2002) (Amended with the Approval of the State Economic and Trade Commission on July 5, 2002)
(Amended with the Approval of the Shareholders' General Meeting of the Company on June 7, 2004) (Amended with the Approval of the State-owned Assets Supervision and Administration Commission of the State Council on July 30, 2004)
(Amended with the Approval of the Shareholders' General Meeting of the Company on June 9, 2005) (Amended with the Approval of the Shareholders' General Meeting of the Company on October 14, 2005)
(Amended with the Approval of the Shareholders' General Meeting of the Company on May 10, 2006) (Amended with the Approval of the Shareholders' General Meeting of the Company on February 27, 2007)
(Amended with the Approval of the Shareholders' General Meeting of the Company on October 12, 2007)
(Amended with the Approval of the Shareholders' General Meeting of the Company on May 9, 2008) (Amended with the Approval of the Shareholders' General Meeting of the Company on October 28, 2008)
(Amended with the Approval of the Shareholders' General Meeting of the Company on May 26, 2009) (Amended with the Approval of the State-owned Assets Supervision and Administration Commission of the State Council on September 11, 2009)
(Amended with the Approval of the Shareholders' General Meeting of the Company on June 22, 2010) (Amended with the Approval of the Shareholders' General Meeting of the Company on February 28, 2011)
(Amended with the Approval of the Shareholders' General Meeting of the Company on October 12, 2012)
(Amended with the Approval of the Shareholders' General Meeting of the Company on December 29, 2015)
(Amended with the Approval of the Shareholders' General Meeting of the Company on October 26, 2017)
(Amended with the Approval of the Shareholders' General Meeting of the Company on December 10, 2019)

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**ARTICLES OF ASSOCIATION OF
Aluminum Corporation of China Limited**

CHAPTER 1 General Provisions

- Article 1. To safeguard the legitimate rights and interests of Aluminum Corporation of China Limited* (the “**Company**”), its shareholders and creditors, and to regulate the organization and activities of the Company, the Company formulated the Articles of Association in accordance with laws and regulations such as the Company Law of the People’s Republic of China (the “**Company Law**”), the Securities Law of the People’s Republic of China (the “**Securities Law**”), the Constitution of the Communist Party of China (the “**Party Constitution**”), the Special Regulations of the State Council on the Overseas Offer and Listing of Shares by Joint Stock Limited Companies (the “**Special Regulations**”), the Mandatory Provisions for Articles of Association of Companies to be Listed Overseas, the Guidelines on Articles of Association of Listed Companies, the Code of Corporate Governance for Listed Companies in China, the rules governing the listing of shares or securities on the stock exchanges on which the Company’s Shares are listed (including the Shanghai Stock Exchange, The Stock Exchange of Hong Kong Limited and the New York Stock Exchange) (the “**Relevant Listing Rules**”).
- Article 2. The Company is a joint stock limited company established in accordance with the Company Law, the Special Regulations, other relevant State laws and administrative regulations.
- Following approval by the State Economic and Trade Commission by virtue of the GJMQG [2001] No. 818, the Company was registered with the State Administration for Industry and Commerce (the “**SAIC**”) on September 10, 2001, and obtained a business license of an enterprise with legal personality. The Company’s unified social credit code is 911100007109288314.
- The Company’s sponsors include Aluminum Corporation of China, Guangxi Investment Group Co., Ltd., Guizhou Materials Development and Investment Co., Ltd.

- Article 3. The Company's registered name:
Full name in Chinese: 中國鋁業股份有限公司
Abbreviated name in Chinese: “中國鋁業”
Full name in English: Aluminum Corporation of China Limited
Abbreviated name in English: Chalco
- Article 4. The Company's domicile: No. 62, North Xizhimen Street, Beijing, China
Postal code: 100082
Tel: (010) 82298322
Fax: (010) 82298158
- Article 5. The legal representative of the Company shall be the chairman of its Board of Directors.
- Article 6. The Company is a joint stock limited company existing in perpetuity.
- Each shareholder shall enjoy rights and assume liabilities to the extent of his shareholding in the Company. The Company shall assume liabilities for its debt to the extent of its entire assets.
- The Company is an independent legal person, which shall be governed and protected by China laws, administrative rules and other regulations issued by the Government.
- Article 7. These Articles of Association shall enter into effect if they are adopted by the special resolutions at the Shareholders' General Meeting of the Company.
- Article 8. These Articles of Association shall become a legally binding document that regulates the organization and acts of the Company and the rights and obligations between the Company and the shareholders and between shareholders inter se from the date on which they become effective.

- Article 9. These Articles of Association shall be binding upon the Company and its shareholders, directors, supervisors, managers and other senior management staff. All the above persons may make claims related to Company matters in accordance with these Articles of Association.
- Subject to CHAPTER 23 of these Articles of Association, shareholders may sue the Company; the Company may sue shareholders, directors, supervisors, the Manager and other senior management staff; shareholders may sue shareholders; and shareholders may sue directors, supervisors, the Manager and other senior management staff of the Company in accordance with these Articles of Association.
- For the purposes of the preceding paragraph, the term “sue” shall include the institution of proceedings in a court or the application to an arbitration institution for arbitration.
- Article 10. The Company may invest in other enterprises. However, except as otherwise provided by laws, the Company shall not become an investor that is jointly and severally liable for the debt of the invested enterprises.
- The Company shall not be an unlimited liability shareholder of any other for-profit organizations.
- Article 11. Under the premise of obeying the laws and administrative regulations of China, the Company has the right of financing or borrowing. The right of financing of the Company includes (but is not limited to) the right to issue the corporate bonds, to mortgage or pledge the right of ownership.
- Article 12. In accordance with the relevant regulations of the Party Constitution and the Company Law, organizations of the Communist Party of China (hereinafter the “**Party**”) shall be established; the Party Committee shall play the core leadership role, providing direction, managing the overall situation and ensuring implementation. The working organs of the Party shall be established, equipped with sufficient staff to deal with Party affairs and provided with sufficient funds to operate the Party organization.

CHAPTER 2 Purpose and Scope of Business

Article 13. The business purpose of the Company is: to maximize the shareholders' interests, establish the management system and operational mechanism that are in line with international standards, strengthen the management, improve the efficiency; improve the technological content of products guided by the market and via product upgrades and technical innovations, continue reducing the costs, expanding the market share, thus, to improve the Company's overall competitiveness.

Article 14. The business scope of the Company shall be in accordance with the items approved by the agency with which the Company is registered.

The business scope of the Company shall include: the exploration and mining of bauxite and other metals, limestone and coal; the production and sale of aluminum, magnesium and other metal products, smelted products and processed products; the production and sales of coal; the production and sales of carbon products and related non-ferrous metal products, water, electricity and steam, industrial oxygen and nitrogen; the production, sales, loading, unloading and transportation services of autoclaved fly ash bricks; the production and sales of sulfuric acid (or the hazardous chemicals); electricity generation and sales; research and development, production and sales of products from comprehensive utilization of mine tailings (including red mud); prospective design, construction and installation; the manufacturing, installation and maintenance of machinery and equipment, spare parts, non-standard equipment; the repairing of automotive and construction machinery; the manufacture and sales of automobile of special process; the road transport of cargo; the installation, maintenance, inspection and sales of telecommunications communication and testing instruments; automat measurement control, the design, installation and testing of network and software system; the material inspection and analysis; operation of office automation and instruments; relevant technological development and technical services.

Article 15. The Company may, based on business development demand, establish wholly owned subsidiaries and holding companies, branches, offices and other branches. The subsidiary name should begin with “Chalco”, the abbreviation for Aluminum Corporation of China Limited. The branch name should begin with the full name of “Aluminum Corporation of China Limited”.

Subject to the approval by relevant government agencies, the Company may adjust its form and scope of business timely, and may establish branches (no matter whether or not it is wholly owned) and offices inside and outside the People’s Republic of China as well as in Hong Kong, Macao or Taiwan according to the business development demand.

CHAPTER 3 Shares and Registered Capital

Article 16. The Company shall have ordinary shares at all times. The ordinary shares issued by the Company include domestic shares and foreign shares. It may have other kinds of shares according to the need, upon approval by the authorities that are authorized by the State Council to examine and approve companies.

Article 17. All the shares issued by the Company shall have a par value which shall be RMB1 Yuan for each share.

For the purposes of the above paragraph, the term “RMB” shall refer to the legal tender of the People’s Republic of China.

Article 18. The Company may issue shares to domestic investors and foreign investors following approval from the State Council authorities in charge of securities.

For the purposes of the preceding paragraph, the term “foreign investors” shall mean investors from foreign countries or from the Hong Kong Special Administrative Region, the Macao Special Administrative Region or Taiwan that subscribe for shares issued by the Company; and the term “domestic investors” shall mean investors inside the PRC, excluding the above-mentioned regions, that subscribe for shares issued by the Company.

Article 19. Shares issued by the Company to domestic investors and to be subscribed for in Renminbi shall be referred to as “domestic investment shares”. Shares issued by the Company to foreign investors and to be subscribed in a foreign currency shall be referred to as “foreign investment shares”. Foreign investment shares listed outside the People’s Republic of China shall be referred to as “foreign investment shares listed outside the People’s Republic of China”. Both holders of domestic investment shares and overseas listed foreign investment shares are holders of common shares and shall enjoy identical rights and bear identical obligations.

For the purposes of the preceding paragraph, the term “foreign currency” means the legal tender, other than the Renminbi, of another country or region that can be used to pay subscription moneys to the Company and which is recognized by the competent state foreign exchange control authority.

The domestic investment shares issued by the Company shall be centrally deposited with Shanghai Branch of China Securities Depository and Clearing Corporation Limited; the overseas listed foreign investment shares issued by the Company shall be centrally deposited with Hong Kong Securities Clearing Company Limited.

Article 20. Foreign investment shares issued by the Company and listed in Hong Kong shall be referred to as “H shares”. H shares shall refer to the shares which have been approved to be listed on the Stock Exchange of Hong Kong Limited (the “**Stock Exchange**”), the par value of which is denominated in Renminbi, and which are subscribed for and traded in Hong Kong dollars.

Article 21. Upon approval by the authority that is authorized by the State Council to approve companies, the Company can issue 11.45 billion shares of ordinary shares; the Company issued a total 8 billion common shares (domestic shares) to its sponsors at the time of its establishment. Upon the approval of the State Council and the national authorities in charge of securities, one of the sponsors, Aluminum Corporation of China has transferred part of shares to China Cinda Asset Management Corporation, China Orient Asset Management Corporation and China Development Bank, in which, 1,662.28 million shares are transferred to China Cinda Asset Management Corporation; 621.67 million shares are transferred to China Orient Asset Management Corporation;

Sponsor's name	Number of shares	Investment Type	Investment Time
Aluminum Corporation of China	7,673,770,000	Net assets	June 28, 2001
Guangxi Investment Group Co., Ltd.	196,800,000	Net assets	June 28, 2001
Guizhou Materials Development and Investment Co., Ltd.	129,430,000	Net assets	June 28, 2001
Total	8,000,000,000		

Article 22. The Company publicly issued 2,749,889,968 shares of overseas listed foreign investment shares (H shares) after the establishment of the Company, in which, there are 2,499,900,153 shares of new shares and 249,989,815 shares of stock shares sold by part of shareholders.

After completion of the aforementioned issues of H shares, the Company has total share capital of 10,499,900,153 shares. The composition of the share capital is as follows: there are 7,750,010,185 domestic shares, accounting for 73.81 percent of the Company's total shares, in which, the sponsor, Aluminum Corporation of China holds 4,656,261,060 shares, accounting for 44.35 percent of the Company's total shares; the sponsor, Guangxi Investment Group Co., Ltd. holds 196,800,000 shares, accounting for 1.87 percent of the Company's total shares; the sponsor, Guizhou Materials Development and Investment Co., Ltd. holds 129,430,000 shares, accounting for 1.23 percent of the Company's total shares; China Cinda Asset Management Corporation holds 1,610,332,210 shares, accounting for 15.43 percent of the Company's total shares; China Orient Asset Management Corporation holds 602,246,135 shares, accounting for 5.73 percent of the Company's total shares; China Development Bank holds 554,940,780 shares, accounting for 5.29 percent of the Company's total shares; the holders of the overseas listed foreign investment shares (H shares) hold 2,749,889,968 shares, accounting for 26.19 percent of the Company's total shares.

Following approval by the approval authority authorized by the State Council, the Company issued additional 549,976,000 shares of overseas listed foreign investment shares (H shares) in 2004.

After completion of the aforementioned issues of H shares, the Company has total share capital of 11,049,876,153 shares. The composition of the share capital is as follows: there are 7,750,010,185 domestic shares, accounting for 70.13 percent of the Company's total shares, in which, the sponsor, Aluminum Corporation of China holds 4,656,261,060 shares, accounting for 42.14 percent of the Company's total shares; the sponsor, Guangxi Investment Group Co., Ltd. holds 196,800,000 shares, accounting for 1.78 percent of the Company's total shares; the sponsor, Guizhou Materials Development and Investment Co., Ltd. holds 129,430,000 shares, accounting for 1.17 percent of the Company's total shares; China Cinda Asset Management Corporation holds 1,610,332,210 shares, accounting for 14.57 percent of the Company's total shares; China Orient Asset Management Corporation holds 602,246,135 shares, accounting for 5.45 percent of the Company's total shares; China Development Bank holds 554,940,780 shares, accounting for 5.02 percent of the Company's total shares; the holders of the overseas listed foreign investment shares (H shares) hold 3,299,865,968 shares, accounting for 29.87 percent of the Company's total shares.

Following the approval of the State Council, China Construction Bank Corporation has recovered the Company's 6.42 percent shares managed by China Cinda Asset Management Corporation and held the shares by itself in 2005, thus becoming the Company's shareholder. The Company's total number of shares has not been changed, but the number of shares held by China Cinda Asset Management Corporation is reduced accordingly.

After completion of the aforementioned shareholder change, the Company has total share capital of 11,049,876,153 shares. The composition of the share capital is as follows: there are 7,750,010,185 domestic shares, accounting for 70.13 percent of the Company's total shares, in which, the sponsor, Aluminum Corporation of China holds 4,656,261,060 shares, accounting for 42.14 percent of the Company's total shares; the sponsor, Guangxi Investment Group Co., Ltd. holds 196,800,000 shares, accounting for 1.78 percent of the Company's total shares; the sponsor, Guizhou Materials Development and Investment Co., Ltd. holds 129,430,000 shares, accounting for 1.17 percent of the Company's total shares; China Cinda Asset Management Corporation holds 900,559,074 shares, accounting for 8.15 percent of the Company's total shares; China Construction Bank Corporation holds 709,773,136 shares, accounting for 6.42 percent of the Company's total shares; China Orient Asset Management Corporation holds 602,246,135 shares, accounting for 5.45 percent of the Company's total shares; China Development Bank holds 554,940,780 shares, accounting for 5.02 percent of the Company's total shares; the holders of the overseas listed foreign investment shares (H shares) hold 3,299,865,968 shares, accounting for 29.87 percent of the Company's total shares.

Following approval by the approval authority authorized by the State Council, the Company issued additional 644,100,000 shares of overseas listed foreign investment shares (H shares) in 2006, in which, there are 600,000,000 shares of new shares and 44,100,000 shares of stock shares sold by part of shareholders.

After completion of the aforementioned issues of H shares, the Company has total share capital of 11,649,876,153 shares. The composition of the share capital is as follows: there are 7,705,910,185 domestic shares, accounting for 66.15 percent of the Company's total shares, in which, the sponsor, Aluminum Corporation of China holds 4,612,161,060 shares, accounting for 39.59 percent of the Company's total shares; the sponsor, Guangxi Investment Group Co., Ltd. holds 196,800,000 shares, accounting for 1.69 percent of the Company's total shares; the sponsor, Guizhou Materials Development and Investment Co., Ltd. holds 129,430,000 shares, accounting for 1.11 percent of the Company's total shares; China Cinda Asset Management Corporation holds 900,559,074 shares, accounting for 7.73 percent of the Company's total shares; China Construction Bank Corporation holds 709,773,136 shares, accounting for 6.09 percent of the Company's total shares; China Orient Asset Management Corporation holds 602,246,135 shares, accounting for 5.17 percent of the Company's total shares; China Development Bank holds 554,940,780 shares, accounting for 4.76 percent of the Company's total shares; the holders of the overseas listed foreign investment shares (H shares) hold 3,943,965,968 shares, accounting for 33.85 percent of the Company's total shares.

Following the approval of the special resolution by the Shareholders' General Meeting of the Company and following the approval by the approval authority authorized by the State Council, the Company issued 1,236,731,739 A shares and 637,880,000 shares in 2007.

Upon the issuance, the composition of the Company's share capital is as follows: there are 13,524,487,892 ordinary shares, in which, the holders of A shares hold 9,580,521,924 shares, accounting for 70.84 percent of the Company's total ordinary shares; the holders of overseas listed foreign investment shares hold 3,943,965,968 shares, accounting for 29.16 percent of the Company's total ordinary shares.

Following the approval of the special resolution by the Shareholders' General Meeting of the Company and following the approval by the approval authority authorized by the State Council, the Company issued additional 1,379,310,344 A shares by way of non-public issuance in June 2015.

Upon the completion of the additional issuance, the composition of the Company's current share capital is as follows: there are 14,903,798,236 ordinary shares, in which, the holders of A shares hold 10,959,832,268 shares, accounting for 73.54 percent of the Company's total ordinary shares; the holders of overseas listed foreign investment shares hold 3,943,965,968 shares, accounting for 26.46 percent of the Company's total ordinary shares.

Upon approval at a Shareholders' General Meeting of the Company and by the relevant authorities of the State Council, the Company completed the registration formalities for the additional shares regarding the acquisition of assets by issuance of shares in February 2019. Following such issuance, the composition of the share capital of the Company is as follows: there are 17,022,672,951 ordinary shares, in which 13,078,706,983 shares are held by holders of A shares and 3,943,965,968 shares are held by holders of overseas listed foreign investment shares, accounting for 76.83% and 23.17% of the Company's total issued ordinary shares, respectively.

Article 23. After the Company's plan for the offering of domestic investment shares and overseas listed foreign investment shares has been approved by the CSRC, the Board of Directors of the Company may arrange for implementation of such plan by means of separate issues.

The Company's plans for the offerings of domestic investment shares and overseas listed foreign investment shares in accordance with the preceding paragraph may be implemented separately within 15 months from the date of approval by the China Securities Regulatory Commission (the "CSRC").

Article 24. If the Company offers domestic investment shares and overseas listed foreign investment shares separately within the total number of shares specified in the offer plan, each such offering shall be fully subscribed for in one time. If special circumstances make it impossible for each such offering to be fully subscribed for in one time, the shares may be offered in installments, subject to the approval of the CSRC.

Article 25. The registered capital of the Company is RMB17,022,672,951 Yuan.

Article 26. The Company may approve capital increases depending on its business and development requirements in accordance with the relevant provisions of the Articles of Association of the Company.

The Company may increase its capital by the following methods:

- (1) raising of new shares from non-specific investors;
- (2) placing of new shares to existing shareholders;
- (3) allotment of new shares to existing shareholders;
- (4) conversion of funds in the capital common reserve to share capital;
- (5) other methods permitted by laws and administrative regulations.

If the Company is to increase its capital by an offering of new shares, it shall do so by the procedure provided for in relevant state laws after such increase has been approved in accordance with these Articles of Association.

Article 27. Except as otherwise provided by laws and administrative regulations, shares in the Company may be transferred freely with no lien attached.

CHAPTER 4 Reduction of Capital and Buyback of Shares

Article 28. In accordance with the provisions of the Articles of Association, the Company may reduce its registered capital.

Article 29. If the Company is to reduce its capital, it must prepare a balance sheet and a list of its property.

The Company shall notify its creditors within 10 days from the date of adoption of the resolution to reduce its registered capital and publish a public announcement of the resolution in newspapers within 30 days. Creditors shall, within 30 days of receiving written notice, or within 45 days of the date of the public announcement for those who have not received written notice, be entitled to require the Company to pay its debts in full or to provide a corresponding security for repayment.

The reduced registered capital of the Company may not be less than the statutory minimum.

Article 30.

The Company may, in the following circumstances, buy back its own outstanding shares in compliance with the requirements provided for in relevant State laws and regulations, regulatory requirements or these Articles of Association, after approval by relevant State authorities:

- (1) reduction of its registered capital;
- (2) merger with another company holding shares of the Company;
- (3) use of shares for employee shareholding scheme or as equity incentive;
- (4) a shareholder opposes a resolution on the merger or division of the Company adopted at a Shareholders' General Meeting and requests that the Company purchase his or her shares;
- (5) use of shares for conversion of corporate bonds which are convertible into shares issued by the Company;
- (6) where it is necessary to safeguard the value of the Company and the rights and interests of its shareholders;
- (7) other circumstances required in laws or administrative regulations.

If the Company buys back its own outstanding shares, it shall do by the provisions set forth from Article 31 to Article 34 of these Articles of Association.

Article 31.

After the Company is approved by relevant State authorities to buy back its own shares, it may proceed in any of the following manners:

- (1) issuance to all of the shareholders of a buyback offer on a pro rata basis;
- (2) buyback through open transactions on a stock exchange;
- (3) buyback by agreement outside a stock exchange;

(4) other manners as permitted by laws and administrative regulations or the State Council's authorities in charge of securities.

Buyback of shares of the Company under the circumstances set forth in items (3), (5) and (6) of the Article 30 shall be conducted through open centralized transaction.

Article 32.

If the Company is to buy back shares by agreement outside a stock exchange, prior approval shall be obtained from the Shareholders' General Meeting in accordance with these Articles of Association. Upon prior approval by the Shareholders' General Meeting obtained in the same manner, the Company may terminate or vary a contract concluded in the manner set forth above or waive any of its rights under such contract.

For the purposes of the preceding paragraph, "contracts for the buyback of shares" shall include (but not be limited to) agreements whereby buyback obligations are undertaken and buyback rights are acquired.

The Company may not transfer a contract for the buyback of its own shares or any of its rights thereunder. With respect to redeemable shares which the Company has the right to buy back, if the buyback is to be made in a manner other than through the market or by tender, the buyback price must be limited to a maximum price; if the buyback is to be made by tender, tenders shall be available to all shareholders alike under same conditions.

Article 33.

Buyback of shares of the Company under the circumstances set forth in items (1), (2) and (3) of the Article 30 shall be resolved at the Shareholders' General Meeting. Buyback of shares of the Company under the circumstances set forth in items (5) and (6) of the Article 30 shall be subject to approval by more than two-thirds of Directors present at the meeting of the board of directors.

The shares bought back by the Company under the circumstances set forth in item (1) of the Article 30 shall be cancelled within ten days after the date of buyback; under the circumstances set forth in items (2) and (4), the shares shall be transferred or cancelled within six months after the date of buyback; under the circumstances set forth in items (3), (5) and (6), the aggregated number of shares of the Company held by itself shall be not more than 10% of the total issued shares of the Company and shall be transferred or cancelled within three years after the date of buyback.

The amount of the Company's registered capital shall be reduced by the total par value of the shares canceled.

Article 34. Unless the Company has already entered the liquidation stage, it must comply with the following provisions in buying back its outstanding shares:

- (1) if the Company buys back shares at their par value, the amount thereof shall be deducted from the book balance of distributable profit and/or from the proceeds of a fresh share offer made to buy back the old shares;
- (2) if the Company buys back shares at a price higher than their par value, the portion corresponding to their par value shall be deducted from the book balance of the Company's distributable profit and/or from the proceeds of a fresh share offer made to buy back the old shares; and the portion in excess of the par value shall be handled according to the following methods:
 - (i) if the shares being bought back were issued at their par value, the amount shall be deducted from the book balance of the Company's distributable profit;

- (ii) if the shares being bought back were issued at a price higher than their par value, the amount shall be deducted from the book balance of distributable profit and/or the proceeds of a fresh share offer made to repurchase the old shares; however, the amount deducted from the proceeds of the fresh share offer may not exceed the total premium obtained at the time of issuance of the old shares nor may it exceed the amount in the Company's premium account (or capital common reserve account) (including the premiums from the fresh share offer) at the time of the buyback;
- (3) the sums paid by the Company for the purposes set forth below shall be paid out of the Company's distributable profit:
- (i) acquisition of the right to buy back its own shares;
 - (ii) amendment of any contract for the buyback of its own shares;
 - (iii) release from any of its obligations under a buyback contract.
- (4) after the par value of the cancelled shares has been deducted from the registered capital of the Company in accordance with relevant regulations, that portion of the amount deducted from the distributable profit and used to buy back shares which corresponds to the par value of the shares bought back shall be credited to the Company's capital common reserve account.

CHAPTER 5 Financial Assistance for the Purchase of Company Shares

Article 35. Neither the Company nor its subsidiaries shall at any time provide any financial assistance in any form to purchasers or prospective purchasers of shares of the Company. Purchasers of shares of the Company as referred to above shall include persons that directly or indirectly assume obligations as a result of purchasing shares of the Company.

Neither the Company nor its subsidiaries shall at any time provide any financial assistance in any form to the above obligors in order to reduce or release them from their obligations.

The provisions of this Article shall not apply to the circumstances described in Article 37 of this Chapter.

Article 36. For the purposes of this Chapter, the term “financial assistance” shall include (but not be limited to) financial assistance in the forms set forth below:

- (1) gift;
- (2) security (including the undertaking of liability or provision of property by the guarantor in order to secure the performance of the obligation by the obligor), indemnity (not including, however, indemnity arising from the Company’s own fault), release or waiver of rights;
- (3) provision of a loan or conclusion of a contract under which the obligations of the Company are to be fulfilled before the obligations of the other party to the contract, or the amendment of, or the transfer of rights under, such loan or contract;
- (4) financial assistance in any other form if the Company is insolvent or has no net assets or if such assistance would lead to a major reduction in the Company’s net assets.

For the purposes of this Chapter, the term “assume obligations” shall include the assumption of an obligation by the obligor by reason of concluding a contract or making an arrangement (whether or not such contract or arrangement is enforceable, and whether or not such obligation is undertaken by the obligor individually or jointly with any other person) or by changing its financial position in any other way.

Article 37. The acts listed below shall not be regarded as acts prohibited under Article 35 of these Articles of Association:

- (1) where the Company provides the relevant financial assistance genuinely for the benefit of the Company and the main purpose of the financial assistance is not the purchase of shares of the Company, or the financial assistance is an incidental part of some overall plan of the Company;
- (2) lawful distribution of the Company’s property in the form of dividends;

- (3) distribution of dividends in the form of shares;
- (4) reduction of registered capital, buyback of shares, adjustment of the equity structure, etc. in accordance with these Articles of Association;
- (5) provision of a loan by the Company within its scope of business and in the ordinary course of its business (provided that the same does not lead to a reduction in the net assets of the Company, unless the financial assistance was paid out of the Company's distributable profit).

CHAPTER 6 Share Certificates and Register of Shareholders

Article 38. The Company's shares shall be registered shares.

The Company's share certificates shall clearly state the following main particulars:

- (1) the Company's name;
- (2) the date of incorporation of the Company;
- (3) the class of shares, par value and the number of shares represented thereby;
- (4) the serial number of the share certificate;
- (5) other matters as required by the Company Law, Special Provisions and the securities exchange(s) on which the shares of the Company are listed.

Article 39. Shares of the Company may be transferred, gifted, succeeded to and mortgaged in accordance with relevant laws, administrative regulations and these Articles of Association.

When shares are transferred and assigned, registration shall be carried out with the share registrar appointed by the Company.

- Article 40. The share certificates shall be signed by the legal representative of the Company. If the signatures of other senior management staff of the Company are required by the stock exchange on which Company shares are listed, the share certificates shall also be signed by such other senior management staff. The share certificates shall become effective after the Company's seal (including the corporation securities' seal) is affixed thereto or printed thereon. The affixing of the Company's seal (including the corporation securities' seal) on the share certificates shall require the authorization of the Board of Directors. The signature of the Chairman of the Board of Directors or of other relevant senior management staff on the share certificates may also be in printed form.
- Article 41. The Company shall not accept its own share certificates as the subject matter of a pledge.
- Article 42. Shares held by the promoters in the Company shall be transferred in accordance with the provisions of laws, regulations and/or the listing rules.
- The directors, supervisors, the Managers and other senior management staff of the Company shall report to the Company the shares (including preferred shares) of the Company that they hold and the changes in their shareholdings. Such shares shall be transferred in accordance with the provisions in laws, regulations and/or the listing rules.
- Article 43. If a director, supervisor, the Manager or other senior management staff of the Company, or a holder of at least 5 percent of the shares of the Company, sells the shares of the Company that he or she holds within six months after acquiring the same, or buys such shares back within six months after selling the same, the gains obtained therefrom shall belong to the Company and the Board of Directors of the Company shall recover such gains from him or her. However, a securities company that underwrote shares on a firm commitment basis and which, after purchasing the shares remaining after the sale, holds at least 5 percent of the shares shall not be subject to the six-month time limit when selling such shares.

If the Board of Directors of the Company fails to act in accordance with the preceding paragraph, shareholders shall have the right to demand that the Board of Directors act within 30 days. If the Board of Directors of the Company fails to act within such time period, shareholders shall have the right, in the interests of the Company, to directly institute a legal action in a court in their own name.

If the Board of Directors of the Company fails to act in accordance with the first paragraph, the responsible directors shall be jointly and severally liable in accordance with the laws.

Article 44. The Company shall keep a register of shareholders, in which the following particulars shall be recorded:

- (1) the name, address (domicile), profession or nature of each shareholder;
- (2) the class and quantity of shares held by each shareholder;
- (3) the amount paid or payable for the shares held by each shareholder;
- (4) the serial numbers of the shares held by each shareholder;
- (5) the date on which each shareholder is registered as such;
- (6) the date on which each shareholder ceases to be a shareholder.

The register of shareholders shall be sufficient evidence of the holding of Company shares by a shareholder, unless there is evidence to the contrary.

Article 45. The Company may, pursuant to an understanding or agreement reached between the CSRC and the foreign securities regulator, keep its register of holders of overseas listed foreign investment shares outside the PRC, and appoint an overseas agent to administer the same. The original register of shareholders of holders of H shares shall be maintained in Hong Kong.

The Company shall keep at its domicile a duplicate of the register of holders of overseas listed foreign investment shares. The appointed overseas agent shall ensure that the register of holders of overseas listed foreign investment shares and its duplicate are consistent at all times.

If the original and duplicate of the register of holders of overseas listed foreign investment shares and its duplicate are inconsistent, the original shall prevail.

Article 46. The Company shall keep a complete register of shareholders.

The register of shareholders shall include the following parts:

- (1) a register kept at the Company's domicile other than those provided for under items (2) and (3) of this paragraph;
- (2) the register of holders of overseas listed foreign investment shares kept in the place of the overseas stock exchange on which the shares are listed;
- (3) registers of shareholders kept in such other places as the Board of Directors may decide necessary for listing of the Company's shares.

Article 47. The various parts of the register of shareholders shall not overlap. The transfer of shares registered in a certain part of the register of shareholders shall not, during the continuance of the registration of such shares, be registered in any other part of the register.

All overseas listed foreign investment shares listed in Hong Kong for which the share capital has been paid in full may be transferred freely in accordance with the Articles of Association. The Board of Directors may refuse to recognize any instrument of transfer without giving any reason unless such transfer is carried out in compliance with the following conditions:

- (1) payment of HK\$2.50 per instrument of transfer or higher charge as agreed at such time by the SEHK has been made to the Company for the purpose of registering the instrument of transfer and other documents relating to or which may affect the title to the shares;

- (2) the instrument of transfer only involves overseas listed foreign investment shares listed in Hong Kong;
- (3) the stamp duty payable on the instrument of transfer as required by Hong Kong laws has been paid;
- (4) relevant share certificates and evidence that the transferor has the right to transfer such shares as reasonably required by the Board of Directors have been provided;
- (5) if the shares are to be transferred to joint holders, the number of registered joint holders may not exceed four; and
- (6) the relevant shares are not encumbered by any Company lien.

All transfers of overseas listed foreign investment shares shall be effective with a written instrument of transfer in general or ordinary form or such other form as acceptable to the Board of Directors. And the instrument of transfer shall become effective after being manually signed or the Company seal (if the transferor or the transferee is a company) is affixed thereto or printed thereon. If the transferor or transferee of the Company's shares is a recognized clearing house or an agent thereof, the signature on the written instrument of transfer may be manually signed or mechanically printed. All instruments of transfer must be kept at the legal address of the Company or other place as may be designated by the Board of Directors from time to time.

Changes to and corrections of each part of the register of shareholders shall be carried out in accordance with the laws of its situs.

Article 48. No changes resulting from share transfers may be made to the register of shareholders within 30 days prior to a Shareholders' General Meeting or 5 days prior to the date of record set by the Company for the purpose of distribution of dividends.

Article 49. When the Company is to convene a Shareholders' General Meeting, to distribute dividends, to be liquidated or to carry out other acts requiring confirmation of equity interests, the Board of Directors or the convener of the Shareholders' General Meeting shall decide upon a date as the record date. Shareholders whose names appear on the register at closing on the record date shall be the shareholders entitled to the relevant rights and interests.

Article 50. Any person that challenges the register of shareholders and requests that his or her name be entered into or removed from the register may apply to the competent court for rectification of the register.

Article 51. Any shareholder who is registered in the register of shareholders or any person who requests that his or her name be entered into the register of shareholders may, if his or her share certificate (the “**original share certificate**”) is lost, apply to the Company for issuance of a replacement certificate in respect of such shares (the “**relevant shares**”).

Applications for the replacement of share certificates from holders of domestic investment shares who have had their certificates stolen or damaged, or who have lost the same shall be handled in accordance with Article 143 of the Company Law.

Applications for the replacement of share certificates from holders of overseas listed foreign investment shares who have had their certificates stolen or damaged, or who have lost the same may be handled in accordance with the laws, stock exchange rules or other relevant regulations of the place where the original of the register of holders of overseas listed foreign investment shares is kept.

Applications for the replacement of share certificates from holders of H shares shall comply with the following requirements:

- (1) the applicant shall submit the application in the standard form prescribed by the Company accompanied by a notarial certificate or statutory declaration. The notarial certificate or statutory declaration shall include the applicant’s reason for the application, the circumstances and evidence of the loss of the share certificate and a declaration that no other person may request registration as a shareholder in respect of the relevant shares.
- (2) the Company shall not have received any declaration requesting registration as a shareholder in respect of the shares from any person other than the applicant before it decides to issue a replacement share certificate.

- (3) if the Company decides to issue a replacement share certificate to the applicant, it shall publish a public announcement of its intention to do so in the newspapers or periodicals designated by the Board of Directors; the period of the public announcement shall be 90 days, during which its publication shall be repeated at least once every 30 days.
- (4) before publishing the public announcement of its intention to issue a replacement share certificate, the Company shall submit a copy of the announcement to be published to the stock exchange where it is listed and may proceed with publication after having received a reply from the stock exchange confirming that the announcement has been displayed in the stock exchange; the announcement shall be displayed in the stock exchange for a period of 90 days; if the application for issuance of a replacement share certificate was made without the consent of the registered holder of the relevant shares, the Company shall mail to such shareholder a photocopy of the public announcement that it intends to publish.
- (5) if, at the expiration of the 90-day periods provided for in items (3) and (4) hereof, the Company has not received any objection to the issuance of a replacement share certificate from any person, it may issue a replacement share certificate in accordance with the application of the applicant.
- (6) when the Company issues a replacement share certificate under this Article, it shall immediately cancel the original share certificate and record such cancellation and the issuance of the replacement share certificate in the register of shareholders.
- (7) all expenses of the Company for the cancellation of the original share certificate and the issuance of a replacement share certificate shall be borne by the applicant. The Company shall be entitled to refuse to take any action until the applicant has provided reasonable security.

Article 52. After the Company has issued a replacement share certificate in accordance with these Articles of Association, it may not delete from the register of shareholders the name of a bona fide purchaser of the replacement share certificate mentioned above or of a shareholder that is subsequently registered as the owner of the shares (provided that he or she is a bona fide purchaser).

Article 53. The Company shall not be held liable for damages in respect of any damage suffered by any person from the cancellation of the original share certificate or the issuance of the replacement share certificate, unless the claimant can prove fraud on the part of the Company.

CHAPTER 7 Rights and Obligations of the Shareholders

Article 54. The Company's shareholders are persons that lawfully hold shares of the Company and whose names are entered in the register of shareholders.

Shareholders shall enjoy rights and bear obligations according to the class and quantity of shares held by them. Holders of shares of the same class shall enjoy equal rights and bear equal obligations.

For the joint shareholders, if one of the joint shareholders has passed away, the surviving shareholders shall be deemed by the Company to have the ownership of the related shares, but the Board of Directors is entitled to ask for the provision of the suitable death certificate for the purpose of revision of the register of shareholders. For the joint shareholders of any classes of shares, only the first named shareholder in the register of shareholders has the right to receive the share certificates of the related shares, receive the notice of the Company, attend the Shareholders' General Meeting and exercise his or her voting right; while, any notice delivered to the said shareholder shall be deemed as the notice has been delivered to all of the joint shareholders of the related shares.

The Company may not exercise any power to freeze or otherwise impair any of the rights attached to any share by reason only that the person who is interested directly or indirectly therein has failed to disclose his or her interests to the Company.

Article 55. Holders of ordinary shares of the Company shall enjoy the following rights:

- (1) collect dividends and other profit distributions on the basis of the number of shares held by them;
- (2) demand, convene, preside over, participate or appoint their proxies to participate in shareholders' meetings in accordance with laws, and exercise voting rights pursuant to their shareholdings;
- (3) supervise and control the Company's business activities, and raise suggestions or inquiries;
- (4) transfer, donate, or pledge shares in accordance with laws, administrative regulations and the Company's Articles of Association;
- (5) obtain relevant information in accordance with the Articles of Association of the Company, which shall include:
 - i. obtaining the Articles of Association of the Company after payment of a charge to cover costs;
 - ii. being entitled to browse and make a copy after payment of reasonable charges, including:
 - (i) all parts of the register of shareholders;
 - (ii) personal information on the directors, supervisors, managers and other senior management staff of the Company, including:
 - (a) current and previous names and aliases;
 - (b) main addresses (domiciles);
 - (c) nationalities;

- (d) full-time and other part-time occupations and duties;
 - (e) identification documents and their numbers.
- (iii) the status of the Company' share capital;
- (iv) reports of the aggregate par value, number of shares, and highest and lowest prices of each category of shares bought back by the Company since the last fiscal year as well as all the expenses paid by the Company therefore;
- (v) meeting minutes of the shareholders' meeting, resolution of the meeting of the Board of Directors, and resolution of the meeting of the Board of Supervisors;
- (vi) stub copy of corporate bond and financial reports.
- (6) participate in the distribution of the surplus assets of the Company according to their shareholding when the Company is terminated or liquidated;
- (7) with respect to any shareholder, who objects to the resolution of the Shareholders' General Meeting on the merger or division of the Company, requires the Company to buy back his or her shares;
- (8) institute a legal action in a People's Court and claim relevant rights, in accordance with the Company Law, other laws, administrative rules and regulations or the Articles of Association, against the acts that damage the Company's interests or infringe the legitimate rights of the shareholders;
- (9) other rights conferred by laws, administrative rules and regulations and the Company's Articles of Association.

Article 56. Holders of common shares of the Company bear the following obligations:

- (1) to comply with the Articles of Association of the Company;

- (2) to pay subscription moneys according to the shares subscribed for by them and the method of acquiring such shares;
- (3) not to return their shares except in circumstances specified in laws and regulations;
- (4) not to abuse their shareholders' rights to harm the interests of the Company or those of other shareholders; not to abuse the Company's independent legal person status or shareholders' limited liability to harm the interests of the Company's creditors; if a shareholder abuses his or her shareholder rights, thereby causing the Company or another shareholder to sustain a loss, he or she shall be held liable for damages in accordance with laws; if a shareholder abuses the Company's independent legal person status or shareholders' limited liability to evade a debt, thereby materially harming the interests of a creditor of the Company, he or she shall bear joint and several liability for the debt of the Company;
- (5) to submit a written report to the Company on the date when they who have 5% or above of interests in shares carrying voting rights charged their shares;
- (6) other obligations imposed by laws, administrative rules and regulations and these Articles of Association.

Shareholders shall not bear any liability for further contributions to share capital other than the conditions agreed to by the subscribers for the shares at the time of subscription.

Article 57.

The controlling shareholders and actual controllers of the Company may not take advantage of their connected relationships to harm the interests of the Company, and they shall be held liable for damages if they violate regulations which causes the Company to sustain a loss.

The controlling shareholders and the actual controllers of the Company bear a fiduciary duty toward the Company and retail shareholders. The controlling shareholder shall exercise its rights as an investor in strict accordance with laws. It may not use such means as a profit distribution, asset restructuring, investment in a third party, appropriation of funds, loan security, etc. or use its controlling position to harm the lawful rights and interests of the Company and the retail shareholders.

Article 58. In addition to the obligations imposed by laws, administrative rules and regulations and the listing rules of the stock exchange on which Company shares are listed, the controlling shareholder of the Company may not, in exercising its shareholder powers, make decisions prejudicial to the interests of all or some of the shareholders due to the exercise of its voting rights on the issues set forth below:

- (1) relieving a director or supervisor of the responsibility to act honestly in the best interests of the Company;
- (2) approving that a director or supervisor (for his or her own or another person's benefit) deprive the Company of its property in any way, including (but not limited to) any opportunities that are advantageous to the Company;
- (3) approving that a director or supervisor (for his or her own or another person's benefit) deprive other shareholders of their individual rights or interests, including (but not limited to) rights to distributions and voting rights, but excluding a restructuring of the Company submitted to the Shareholders' General Meeting for adoption in accordance with these Articles of Association.

Article 59. For the purposes of the preceding Article, the term "controlling shareholder" shall refer to a person that satisfies any of the following conditions:

- (1) a person who, acting alone or in concert with others, has the power to elect not less than one half of the directors;

- (2) a person who, acting alone or in concert with others, has the power to exercise or control 30 percent or more of the Company's voting rights;
- (3) a person who, acting alone or in concert with others, holds 30 percent or more of the issued and outstanding shares of the Company;
- (4) a person who, acting alone or in concert with others, has de facto control of the Company in any other manner.

CHAPTER 8 Shareholders' General Meeting

Article 60. The Shareholders' General Meeting shall be the organ of authority of the Company and shall exercise its functions and powers in accordance with the laws.

Article 61. The Shareholders' General Meeting shall exercise the following functions and powers:

- (1) to decide on the business policies and investment plans of the Company;
- (2) to elect and replace directors and decide on matters concerning the remuneration of directors;
- (3) to elect and replace the supervisors who are to be appointed from among the shareholders' representatives and decide on matters concerning the remuneration of supervisors;
- (4) to consider and approve reports of the Board of Directors;
- (5) to consider and approve reports of the Board of Supervisors;
- (6) to consider and approve the Company's annual financial budget plans and final accounting plans;
- (7) to consider and approve the Company's profit distribution plans and plans for making up losses;

- (8) to pass resolutions concerning the increase or reduction of the Company's registered capital;
- (9) to pass resolutions on the merger, division, dissolution or liquidation of the Company;
- (10) to pass resolutions on the issuance of corporate bonds;
- (11) to pass resolutions on the engagement, dismissal or non-renewal of the engagement of accounting firms by the Company;
- (12) to amend the Articles of Association of the Company;
- (13) to pass resolutions on matters relating to the share-related remuneration (such as placement of shares or stock option, etc.) of the employees;
- (14) to consider and approve matters relating to the purchase and/ or sale by the Company within one year of material assets valued at more than 25 percent of the Company's total assets;
- (15) to pass resolutions on matters relating to the security for third parties that laws, administrative regulations and the Company's Articles of Association require to be resolved by the Shareholders' General Meeting;
- (16) to consider and approve changes in the use of raising funds;
- (17) to consider and approve employee shareholding schemes or equity incentive schemes;
- (18) other matters that laws, administrative regulations, departmental rules or the Company's Articles of Association require to be resolved by the Shareholders' General Meeting.

The Shareholders' General Meeting may delegate or entrust relevant matters to be handled by the Board of Directors.

Article 62.

Any external guarantee matters of the Company shall be passed by through deliberation by the Board of Directors. The following guarantee matters after the deliberation by the Board of Directors shall be submitted to the Shareholders' General Meeting for approval:

- (1) any guarantee provided after the total guarantee amount of the Company and its holding subsidiaries reaches or exceeds 50 percent of the latest audited net assets;
- (2) any guarantee provided for those whose asset to liability ratio exceeds 70 percent;
- (3) any guarantee with a single amount guaranteed exceeding 10 percent of the latest audited net assets;
- (4) security to be provided for a shareholder, the actual controller or a connected person thereof;
- (5) any guarantee provided after the total guaranteed amount of the Company reaches or exceeds 25 percent of the latest audited net assets;
- (6) other provisions of security that laws, administrative rules and regulations, as well as these Articles of Association specify to be submitted to the Shareholders' General Meeting for approval.

If a director, the Manager or other senior officer violates a provision on the approval authority or consideration procedure for the provision of security to third parties as specified in laws or these Articles of Association, thereby causing the Company to sustain a loss, he or she shall be held liable for damages and the Company may institute a legal action against him or her in accordance with the laws.

Article 63. The matters that shall be decided by the Shareholders' General Meeting in accordance with the laws, the administrative regulations and rules, as well as the Articles of Association must be reviewed by the Shareholders' General Meeting, in order to protect the decision-making power of the Company's shareholders on such matters. When necessary and reasonable, the Shareholders' General Meeting may authorize the Board of Directors to decide to the extent authorized on specific matters that relate to the matters to be resolved and that cannot be promptly decided on at the Shareholders' General Meeting.

As for the authorization of the Board of Directors by the Shareholders' General Meeting, the ordinary resolutions of the Shareholders' General Meeting shall be adopted by shareholders in attendance (including proxies) holding at least half of the voting rights; the special resolutions of the Shareholders' General Meeting shall be adopted by shareholders in attendance (including proxies) holding at least two-thirds of the voting rights. The content of authorization should be clear and specific.

Article 64. Without the prior approval of the Shareholders' General Meeting, the Company may not conclude any contract with any person other than a director, a supervisor, a manager or other senior management staff of the Company for the delegation of the whole business management or important business management of the Company to that person.

Article 65. Shareholders' general meetings can be divided into annual shareholders' general meetings and extraordinary shareholders' general meetings. Annual meetings shall be convened once a year and shall be held within six months following the preceding fiscal year.

The Board of Directors shall convene an extraordinary shareholders' general meeting within two months after the occurrence of any of the following circumstances:

- (1) the number of directors is less than the number provided for in the Company Law or less than two-thirds prescribed in the Articles of Association of the Company;
- (2) the losses of the Company that have not been made up reach one-third of the total share capital of the Company;

(3) upon the request of a shareholder who alone has held or shareholders who together have held at least 10 percent (including 10 percent) of the shares of the Company for at least 90 days in succession (the shareholding referred to above shall be calculated as of the day on which the written request is made);

(4) The Board of Directors considers that there is a need or the Board of Supervisors proposes a meeting;

The amount of the shareholding shall be based on the date of the written proposal in the case of preceding paragraph (3).

Article 66.

When the Company is to hold a general shareholders' meeting, it shall issue a written notice 45 days (including the meeting day) prior to the meeting informing all the registered shareholders of the matters to be considered at and the date and place of the meeting. Shareholders that intend to attend the meeting shall, within 20 days prior the day on which the meeting is to be held, serve a written reply on the Company stating that they will attend the meeting.

Based on the written replies received 20 days before the Shareholders' General Meeting is to be held, the Company shall calculate the number of voting shares represented by the shareholders intending to attend the meeting. If the number of voting shares represented by the shareholders intending to attend the meeting is not less than half of the total number of the Company's voting shares, the Company may hold the Shareholders' General Meeting. If not, the Company shall, within five days, inform the shareholders once again of the matters to be considered at and the date and place of the meeting in the form of a public announcement. After such notification by public announcement, the Company may hold the Shareholders' General Meeting.

Article 67.

The motion of the Shareholders' General Meeting shall be the specific motion raised for the matters to be discussed at the Shareholders' General Meeting. The motion of the Shareholders' General Meeting shall meet the following requirements:

(1) its content does not contravene laws, administrative regulations and these Articles of Association and falls within duties of the Shareholder' General Meeting;

(2) it has specific subject and detailed matters to be examined at the meeting;

(3) it shall be submitted or sent to the Board of Directors in writing.

Article 68. When the Company is to hold an annual Shareholders' General Meeting, the Board of Directors, the Board of Supervisors and a shareholder alone or shareholders together holding at least 3 percent of the Company's shares shall be entitled to propose motions to the Company.

A shareholder alone or shareholders together holding at least 3 percent of the shares of the Company may submit extempore motions in writing to the convener 10 days prior to the date of such meeting. The convener shall issue a supplementary notice of the Shareholders' General Meeting and make a public announcement of the contents of such extempore motion within two days after receipt of the motion.

Except as provided in the preceding paragraph, the convener may not make any changes to the motions set forth in the notice of the Shareholders' General Meeting or add any new motions once the notice and announcement of the Shareholders' General Meeting have been issued.

Article 69. The matters to be discussed at or decided by the Shareholders' General Meeting shall be determined in accordance with the Company Law and these Articles of Association. The Shareholders' General Meeting shall make decision on any matters prescribed by these Articles of Association.

The Shareholders' General Meeting may not vote and pass resolution on motions that are not set forth in the Article 66 and Article 68 or that are not consistent with Article 67 of these Articles of Association.

Article 70. The notice of a Shareholders' General Meeting shall:

(1) be made in writing;

(2) specify the place, date and time of the meeting;

(3) describe the matters to be discussed at the meeting;

- (4) provide to the shareholders the information and explanations necessary to make informed decisions on the matters to be discussed; without limiting the generality of the foregoing, when the Company proposes a merger, buyback of shares, restructuring of share capital or other reorganization, it shall provide the specific conditions and contract (if any) of the transaction contemplated and earnestly explain the cause and effect of the transaction;
- (5) contain a disclosure of the nature and extent of the material interests, if any, of any director, supervisor, the Manager or other senior management staff in any matter to be discussed; and an explanation of the difference, if any, between the way in which the matter to be discussed would affect such director, supervisor, the Manager or other senior management staff in his or her capacity as shareholder and the way in which such matter would affect other shareholders of the same class;
- (6) contain the full text of any special resolution proposed to be moved at the meeting;
- (7) contain conspicuously a statement that all shareholders are entitled to attend and vote, that they may appoint one or more proxies in writing to attend and vote at such meeting on their behalves and that such proxies need not be shareholders of the Company;
- (8) state the time and place for serving the instruments of appointment for voting at the meeting.

Article 71. Notice of a Shareholders' General Meeting shall be delivered to the shareholders (whether or not entitled to vote thereat), by hand or prepaid mail at the recipient's address shown in the register of shareholders.

For the holders of domestic shares, notice of a Shareholders' General Meeting may also be delivered by way of public announcement. Such announcement shall be published in one or more newspapers or periodicals designated by the securities regulatory authority of the State Council within the period from the 45th day to the 50th day (including the 45th and the 50th day) prior to the date of the meeting to be held. Once the announcement is made, all the holders of domestic shares shall be deemed to have received the notice of the relevant Shareholders' General Meeting.

For holders of H Shares, notice of a Shareholders' General Meeting may also be delivered or provided by other means as specified in Article 236 of these Articles of Association, subject to laws, regulations and the relevant listing rules of the place where the Company's shares are listed.

Article 72. Any shareholder entitled to attend and vote at a shareholders' meeting shall have the right to appoint one or more persons (who need not be shareholders) as his or her proxies to attend and vote on his or her behalf. Such proxy may exercise the following rights in accordance with his or her appointment by the shareholder:

- (1) the shareholders right to be heard at the Shareholders' General Meeting;
- (2) the right to demand or join in the demand for a ballot;
- (3) unless otherwise provided in accordance with the applicable listing rules or other securities laws and regulations, the voting rights shall be exercised by show of hands or by ballot, except that if a shareholder has appointed more than one proxy, such proxies may only exercise their voting rights by ballot.

Article 73. Shareholders shall appoint their proxies by written instruments, which shall be signed by the principals or their agents appointed in writing. If the principal is a legal person, the instrument shall be under the seal of the legal person or signed by its director(s) or duly authorized agent(s). The instrument of appointment shall specify the number of shares of the principal that the proxy represents. In case more than one person are appointed to be the proxies of shareholders, the instrument of appointment shall specify the number of voting shares which each proxy represents.

Article 74. The instrument appointing a voting proxy shall be deposited at the domicile of the Company or at such other place as specified in the notice of the meeting within 24 hours prior to the meeting at which the proxy is authorized to vote or 24 hours prior to the specified time of the vote. If the instrument is signed by another person authorized by the principal, the power of attorney or other document authorizing the signature shall be notarized. The notarized power of attorney or other authorizing document shall be deposited together with the instrument appointing the voting proxy at the domicile of the Company or at such other place as specified in the notice of the meeting.

If the principal is a legal person, its legal representative or the person authorized by a resolution of its Board of Directors or other decision-making body shall attend the Shareholders' General Meeting of the Company as the representative of such legal person.

- Article 75. Any form issued by the Board of Directors of the Company to the shareholders for the appointment of proxies shall give the shareholders free choice to instruct their proxies to cast an affirmative or negative vote and enable the shareholders to give separate instructions on each matter to be voted on in connection with each point of discussion of the meeting. The instrument of appointment shall specify that in the absence of instructions from the shareholder, the proxy may vote as he or she thinks fit.
- Article 76. A vote made in accordance with the terms of an instrument of appointment shall be valid notwithstanding the previous death or loss of capacity of the principal or revocation of the proxy or of the authority under which the proxy was executed, or the transfer of the relevant shares, as long as the Company did not receive written notice of the event before the relevant meeting commenced.
- Article 77. When the Shareholders' General Meeting considers matters relating to a connected transaction, the connected shareholders shall not participate in the vote, and the number of voting shares represented by them shall not count toward the total number of valid voting shares. The announcement of the resolutions of the Shareholders' General Meeting shall fully disclose the way the unconnected shareholders voted.
- Article 78. Any proxy who represents an individual shareholder to attend the Shareholders' General Meeting shall provide his or her identification document as well as the power of attorney signed by the principal or the representative authorized by the principal. In the case of the legal representative of a corporate shareholder appoints a proxy to attend the meeting, the proxy shall provide his or her identification document as well as the power of attorney signed by the legal representative. Any proxy authorized by way of a resolution of its Board of Directors or other decision making body who attend the Shareholders' General Meeting shall provide his or her identification document as well as the power of attorney signed by the Board of Directors or other decision making body and under the seal of the legal person. The instrument of appointment shall specify the date of issuance.

- Article 79. The Board of Directors, the independent directors and qualified shareholders have the right to solicit voting rights (in accordance with the standard issued by the authorized supervising department from time to time) from shareholders at the Shareholders' General Meeting. The public solicitation of voting rights shall be done in compliance with the provisions of the relevant regulatory authorities and the stock exchange where the Company's shares are listed and traded.
- Article 80. Resolutions of the Shareholders' General Meeting are divided into ordinary resolutions and special resolutions.
- Ordinary resolutions of the Shareholders' General Meeting shall be adopted by shareholders in attendance (including proxies) holding at least half of the voting rights.
- Special resolutions of the Shareholders' General Meeting shall be adopted by shareholders in attendance (including proxies) holding at least two-thirds of the voting rights.
- The shareholders (including their proxies) attending the meeting shall clearly show approval or objection to every matter to be voted on. As for the unpolled vote or abstention, the Company will not treat it as the vote with voting right when calculating the voting result of this matter.
- Article 81. When shareholders (including proxies) vote at the Shareholders' General Meeting, they shall exercise their voting rights according to the number of voting shares that they represent. Except for the cumulative voting system adopted by the directors or supervisors provided in Article 110 of these Articles of Association, each share shall have one vote. No voting rights shall be attached to the Company shares held by the Company, and such shares shall not be counted among the total number of voting shares present at the Shareholders' General Meeting.
- Subject to the applicable listing rules as amended from time to time, where any shareholder is required to abstain from voting on any particular matter being considered or restricted to voting only for or only against any particular matter being considered, any votes cast by or on behalf of such shareholder in contravention of such requirement or restriction shall not be counted.

Article 82. Votes at a Shareholders' General Meeting shall be taken by a show of hands, unless otherwise provided in rules governing the listing of securities or other securities laws and regulations or unless a vote by ballot is demanded before or after any vote by show of hands by:

- (1) the chairman of the meeting;
- (2) at least two shareholders with voting rights or proxies with voting rights;
- (3) one or several shareholders (including proxies) holding, alone or together, at least 10 percent of the shares carrying the right to vote at the Shareholders' General Meeting.

Unless otherwise provided in rules governing the listing of securities or other securities laws and regulations or unless a vote by ballot is demanded, the chairman of the meeting shall announce whether the motion has been carried in accordance with the results of the vote by show of hands, and shall record the same in the minutes of the meeting (without need to evidence the number of votes for or against the resolutions adopted at the meeting, or the percentages thereof), which shall be conclusive evidence.

The demand for a vote by ballot may be withdrawn by the person who made it.

Article 83. If the matter demanded to be voted upon by ballot is the election of the chairman or the adjournment of the meeting, a ballot shall be taken immediately. If a ballot is demanded for any other matter, such ballot shall be taken at the time decided upon by the chairman and the meeting may proceed with the discussion of other matters; the result of the ballot shall still be regarded as a resolution passed at that meeting.

Article 84. When a ballot is held, shareholders (including proxies) having the right to two or more votes need not use all of their voting rights in the same way.

Article 85. When the numbers of votes for and against are equal, regardless of whether the vote is taken by show of hands or by ballot, the chairman of the meeting shall be entitled to one additional vote.

Article 86. Decisions of the Shareholders' General Meeting on any of the following matters shall be adopted by ordinary resolution:

- (1) to decide on the business policies and investment plans of the Company;
- (2) to elect and change directors and decide on matters concerning the remuneration of directors;
- (3) to elect and change the supervisors who are to be appointed from among the shareholders' representatives and decide on matters concerning the remuneration of supervisors;
- (4) to consider and approve reports of the Board of Directors;
- (5) to consider and approve reports of the Supervisory Committee;
- (6) to consider and approve the Company's annual financial budget plans and final accounting plans;
- (7) to consider and approve the Company's profit distribution plans and plans for making up losses;
- (8) to pass resolutions on the engagement, dismissal or non-renewal of the engagement of accounting firms by the Company;
- (9) to consider and approve changes in the use of raising funds;
- (10) the matters other than those which laws, administrative rules and regulations or these Articles of Association require to be adopted by special resolution.

Article 87. Decisions of the Shareholders' General Meeting on any of the following matters shall be adopted by special resolution:

- (1) the increase or reduction of the registered capital and issuance of any class of shares, warrants or other similar securities of the Company;
- (2) the issuance of corporate bonds;

- (3) division, merger, dissolution and liquidation, as well as major acquisitions or disposals of the Company;
- (4) the amendment of these Articles of Association;
- (5) the amendment of the rights of any class shareholders;
- (6) to resolve matters relating to the purchase and/or sale by the Company within one year of material assets valued at more than 25 percent of the Company's total assets;
- (7) provisions of security that laws, administrative regulations, as well as these Articles of Association specify to be approved at the Shareholders' General Meeting;
- (8) employee shareholding schemes or equity incentive schemes;
- (9) other matters which laws, administrative rules and regulations or these Articles of Association require to be adopted by special resolution or which the Shareholders' General Meeting considers will have a material impact on the Company and therefore require, by an ordinary resolution, to be adopted by special resolution.

Article 88. Any resolution adopted at the Shareholders' General Meeting shall be consistent with the relevant provisions of Chinese laws, administrative regulations and rules, as well as these Articles of Association.

Article 89. In case that the independent directors, board of supervisors or shareholders alone or together holding at least 10 percent of the Company's shares request to call an extraordinary Shareholders' General Meeting or classified shareholders' meeting, the following procedures shall be followed:

- (1) The proponent(s) may sign one or more written requests of identical form and substance requesting that the Board of Directors convene an Extraordinary Shareholders' General Meeting. The Board of Directors shall give a written response on whether or not it agrees to call such extraordinary shareholders' general meeting within 10 days after receipt of the proposal to call such meeting.

- (2) If the Board of Directors agrees to call an Extraordinary Shareholders' General Meeting, it shall issue a notice calling such meeting within 5 days after it has so resolved. The consent of the relevant original proponent(s) shall be secured if any change is to be made in the notice to the original request.
- (3) If the Board of Directors does not agree to call an Extraordinary Shareholders' General Meeting, the reasons shall be stated and announced.
- (4) If the Board of Directors does not agree the proposal of the Board of Supervisors to call an Extraordinary Shareholders' General Meeting or fails to give a response within 10 days after receipt of the request, it shall be deemed to be unable to or have failed to perform its duty of convening the Shareholders' General Meeting, and the Board of Supervisors may itself convene and preside over such meeting. The procedure according to which they convene such meeting shall, to the extent possible, be identical to the procedure according to which shareholders' meetings are to be convened by the Board of Directors.
- (5) If the Board of Directors does not agree the proposal of the shareholders to call an Extraordinary Shareholders' General Meeting, the shareholders shall have the right to propose to the Board of Supervisors in writing that it calls the Extraordinary Shareholders' General Meeting.

If the Board of Supervisors agrees to call the Extraordinary Shareholders' General Meeting, it shall issue a notice calling such meeting within 5 days after receipt of the request. The consent of the relevant original proponent(s) shall be secured if any change is to be made in the notice to the original request.

If the Board of Supervisors fails to issue a notice calling the Shareholders' General Meeting by the prescribed deadline, it shall be deemed to have failed to convene and preside over such meeting, and a shareholder or shareholders of the Company may himself/themselves convene and preside over such meeting (Until the resolution(s) of the Shareholders' General Meeting is/ are announced, the shareholding percentages of the convening shareholders may be not less than 10 percent). The procedure according to which they convene such meeting shall, to the extent possible, be identical to the procedure according to which shareholders' meetings are to be convened by the Board of Directors.

When the Board of Supervisors or shareholders itself/themselves convene a Shareholders' General Meeting, the Board of Directors shall be informed in written notice; the filing procedures shall be handled at relevant department in charge in accordance with the applicable requirements. The Board of Directors and the Secretary to the Board of Directors shall give their cooperation. The Board of Directors shall provide the register of shareholders as of the date of record. The reasonable expenses incurred by such meetings shall be borne by the Company and shall be deducted from the sums owed by the Company to the negligent directors.

Article 90.

Shareholders' General Meetings shall be convened and presided over by the Chairman of the Board. If the Chairman of the Board fails or is unable to perform his or her duties, the meeting shall be presided over by the Vice Chairman of the Board. If the Vice Chairman of the Board fails or is unable to perform his or her duties, the meeting shall be presided over by the director jointly elected by at least one half of the directors. Where no chairman is designated, the shareholders attending the meeting may elect one person to preside over the meeting. If for any reason the shareholders are unable to elect a chairman, the shareholder holding the largest number of voting shares and attending the meeting (whether in person or by proxy) shall preside over the meeting.

At a Shareholders' General Meeting convened by the Board of Supervisors, the Chairman of the Board of Supervisors shall preside. If the Chairman of the Board of Supervisors fails or is unable to perform his or her duties, the meeting shall be presided over by the supervisor jointly elected by at least one half of the supervisors.

If a Shareholders' General Meeting is convened by a shareholder himself or shareholders themselves, the meeting shall be presided over by the representative selected by the convener(s).

While a Shareholders' General Meeting is holding, if the chairman of the meeting violates the rules of procedure, making continuance of the Shareholders' General Meeting impossible, with the consent of shareholders holding more than one half of the voting rights present at the meeting, the Shareholders' General Meeting may elect a person to serve as chairman of the meeting and the meeting shall continue.

- Article 91. The chairman of the meeting shall decide, based on the voting results, whether or not a resolution of the Shareholders' General Meeting has been adopted. His decision shall be final and shall be announced at the meeting and recorded in the minutes of the meeting. The resolutions adopted at the Shareholders' General Meeting shall be announced in accordance with the relevant provisions of the applicable laws and stock exchange where the Company's stock is traded.
- Article 92. If the chairman of the meeting has any doubt concerning the result of the vote on any resolution, he or she may organize a recount of the number of votes cast. If the chairman of the meeting does not conduct a recount of the votes and an attending shareholder or proxy challenges the result of a vote announced by the chairman of the meeting, he or she has the right to demand a vote recount immediately following the announcement of the result, in which case the chairman of the meeting shall promptly organize a recount of the votes.
- Article 93. If a vote recount is conducted at a Shareholders' General Meeting, the result thereof shall be recorded in the minutes of the meeting.
- The minutes of Shareholders' General Meeting shall be prepared by the secretary and be signed by directors, supervisors, secretary of the Board, the convener or their representatives and the host (chairman of the meeting) present at the meeting.
- The adopted resolutions of Shareholders' General Meeting shall be kept as the Company's minutes of meetings. The records and minutes of meetings shall be written in Chinese. The minutes of meetings together with the sign-in register of attending shareholders and the instruments of appointment of proxies shall be kept at the Company's domicile for at least 10 years.
- Article 94. Shareholders may examine photocopies of the minutes of meetings during the Company's office hours without charge. If any shareholder demands from the Company a photocopy of relevant minutes of meetings, the Company shall send such photocopies within seven days after receiving payment of reasonable charges.

CHAPTER 9 Special Voting Procedures for Class Shareholders

Article 95. Shareholders that hold different classes of shares shall be class shareholders.

Class shareholders shall enjoy rights and bear obligations in accordance with laws, administrative rules and regulations and these Articles of Association.

Article 96. In case that the Company intends to alter or abolish the rights of classified shareholders, the Stockholders' General Meeting shall pass it through a special resolution and respective meetings of stockholders convened by the affected classified shareholders shall pass it on pursuant to the Article 97 to Article 101 of these Articles of Association.

Article 97. The following situations shall be regarded as alternation or abolishment of the rights of a certain classified shareholder:

- (1) the increase or decrease of the number of shares of such class, or increase or decrease of the number of shares of a class having voting rights, distribution rights or other privileges equal or superior to those of the shares of such class;
- (2) the conversion of all or part of the shares of such class into shares of another class, or the conversion of all or part of the shares of another class into shares of such class or the grant of the right to such change;
- (3) the removal or reduction of rights to accrued dividends or cumulative dividends attached to shares of such class;
- (4) the reduction or removal of a dividend preference, or a property distribution preference during liquidation of the Company, attached to shares of such class;
- (5) the addition, removal or reduction of share conversion rights, options, voting rights, transfer rights, preemptive rights to rights issues or rights to acquire securities of the Company attached to shares of such class;
- (6) the removal or reduction of rights to receive amounts payable by the Company in particular currencies attached to shares of such class;

- (7) the creation of a new class of shares with voting rights, distribution rights or other privileges equal or superior to those of the shares of that class;
- (8) the imposition of restrictions or additional restrictions on the transfer or ownership of shares of such class;
- (9) the issuance of rights to subscribe for, or convert into, shares of such class or another class;
- (10) the increase of the rights and privileges of shares of another class;
- (11) such restructuring of the Company as would cause shareholders of different classes to bear disproportionate liabilities under the restructuring;
- (12) the amendment or deletion of the provisions of this Chapter.

Article 98.

Shareholders of the affected class, whether or not otherwise having the right to vote at Shareholders' General Meeting, shall have right to vote at class shareholders' meetings in respect of any of the matters referred to in items (2) to (8) and items (11) to (12) of Article 97, except that interested shareholders shall not have the right to vote at class shareholders' meetings.

For the purposes of the preceding paragraph, the term "interested shareholders" shall have the following meaning:

- (1) if the Company is to issue a buyback offer to all of the shareholders in the same proportion or is to buy back its own shares through open transactions on a stock exchange in accordance with Article 31 of these Articles of Association, the controlling shareholder as defined in Article 59 of these Articles of Association shall be an "interested shareholder";
- (2) if the Company is to buy back its own shares by agreements outside a stock exchange in accordance with Article 31 of these Articles of Association, holders of shares to which such agreements relate shall be "interested shareholders";

(3) shareholders that, under a proposed restructuring of the Company, would bear liabilities in a proportion smaller than that of the liabilities borne by other shareholders of the same class, and shareholders that have an interest in a proposed restructuring of the Company that is different from the interest in such proposed restructuring of other shareholders of the same class, shall be “interested shareholders”.

Article 99. Resolutions of a class shareholders’ meeting may be passed only by two-thirds or more of the equity interests carrying voting rights that are represented at the meeting in accordance with Article 98.

Subject to the applicable listing rules as amended from time to time, where any shareholder is required to abstain from voting on any resolution being considered at the class shareholders’ meeting or restricted to voting only for or only against any resolution being considered at the class shareholders’ meeting, any votes cast by or on behalf of such shareholder in contravention of such requirement or restriction shall not be counted.

Article 100. When the Company is to hold a class shareholders’ meeting, it shall issue a written notice 45 days prior to the meeting informing all the registered shareholders of that class of the matters to be considered at and the date and place of the meeting. Shareholders that intend to attend the meeting shall, within 20 days prior the day on which the meeting is to be held, serve a written reply on the Company stating that they will attend the meeting.

If the number of shares carrying the right to vote at the meeting represented by the shareholders intending to attend the meeting is not less than half of the total number of shares of that class carrying the right to vote at the meeting, the Company may hold the class shareholders’ meeting. If not, the Company shall, within five days, inform the shareholders once again of the matters to be considered at and the date and place of the meeting in the form of a public announcement. After such notification by public announcement, the Company may hold the class shareholders’ meeting.

Article 101. If a class shareholders’ meeting is to be called by issuance of a meeting notice, notice of such meeting need be delivered only to the shareholders entitled to vote thereat.

The procedure according to which class shareholders' meetings are held shall, to the extent possible, be identical to the procedure according to which Shareholders' General Meeting is held. Provisions of these Articles of Association relevant to procedures for the holding of Shareholders' General Meeting shall be applicable to class shareholders' meetings.

Article 102. Apart from other class shareholders, shareholders with domestic shares and shareholders with overseas listed foreign investment shares are regarded as different classified shareholders.

The special voting procedures for class shareholders shall not apply in the following circumstances:

- (1) where, as approved by way of a special resolution of the Shareholders' General Meeting, the Company issues, either separately or concurrently, domestic investment shares and overseas listed foreign investment shares every 12 months, and the quantity of domestic investment shares and overseas listed foreign investment shares intended to be issued does not exceed 20 percent of the outstanding shares of the respective classes; or
- (2) where the plan for the issuance of domestic investment shares and overseas listed foreign investment shares upon the establishment of the Company is completed within 15 months from the date of approval by the State Council's securities authority.

CHAPTER 10 Party Organizations (the Party Committee)

Article 103. The Company shall set up the Committee of the Communist Party of China of Aluminum Corporation of China Limited (the "**Party Committee**"), consisting of one secretary, one to two deputy secretary and several members. Eligible members of the Party Committee may serve as members of the Board of Directors, the Supervisory Committee and senior management through statutory procedures, while eligible Party members of the Board of Directors, the Supervisory Committee and senior management may also serve as members of the Party Committee pursuant to relevant provisions and procedures. Meanwhile, the Company shall also set up a disciplinary committee in accordance with the provisions, which shall consist of one secretary and several members.

Article 104.

The Party Committee shall fulfil the following responsibilities in accordance with the Constitution of the Communist Party of China and other regulations as prescribed by the Party:

- (1) To ensure and supervise the Company's implementation of policies and guidelines of the Party and the State, and implement major strategic decisions of the Central Committee of the Party and the State Council, as well as important work arrangements of the Party organizations of higher levels.
- (2) To strengthen its leadership and gate keeping role in the process of selection and appointment of personnel, and adhere to the principle of the Party supervising the performance of officials while ensuring the lawful selection by the Board of Directors of the senior management and the lawful exercise of the power of the senior management in the employment of personnel.
- (3) To research and discuss the reform, development and stability of the Company, major operational and management issues and major issues concerning employees' interests, and provide comments and suggestions; to support the Shareholders' General Meeting, the Board of Directors, the Supervisory Committee and the senior management in performing their duties in accordance with law, and support the employee representatives' meeting in carrying out its work.
- (4) To undertake the main responsibility of comprehensive and strict Party management; to lead the Company's ideological and political work, the united front work, the spiritual civilization construction, the corporate culture cultivation as well as the work of groups such as the labor union and the Communist Youth League; to lead the construction of the Party's working style and its clean and honest administration, and support the discipline inspection committee in earnestly performing its supervisory responsibilities.
- (5) To strengthen the Company's grassroots Party organizations and their team building, give full play to the role of the Party branches as strongholds and to the role of the Party members as pioneers and fine examples, and unite and lead officials and employees to devote themselves into the reform and development of the Company.
- (6) To handle other important matters within the scope of duties of the Party Committee.

CHAPTER 11 Board of Directors

- Article 105. The Company shall establish a Board of Directors. The Board of Directors is the permanent authority and management decision-making body of the Company, which is subject to the supervision of the Supervisory Committee and all the shareholders, and is responsible for and report to the Shareholders' General Meeting.
- Article 106. The Board of Directors shall be composed of 9 directors. The outside directors (herein meaning those directors who do not hold office in the Company) shall represent not less than 50 percent of the members of the Board of Directors, of which at least 3 directors shall be independent directors (herein meaning those directors who are independent to the shareholders and do not hold office in the Company).
- The Board of Directors shall include one chairman and one vice chairman.
- As needed, under the Board of Directors there shall be such special committees as an Audit Committee, a Nomination Committee, a Remuneration Committee, a Development and Planning Committee, and an Occupational Health and Safety and Environment Committee. The Audit Committee shall be composed entirely of independent directors, of whom at least one shall be a financial or accounting professional. The Remuneration Committee and the Nomination Committee shall consist of a majority of independent directors.
- Article 107. The directors of the Company shall be natural persons. Directors need not hold shares of the Company.
- Article 108. Directors shall be elected by the Shareholders' General Meeting and serve terms of three years (from the date of being elected to the date that the new Board of Directors is elected by the Shareholders' General Meeting). At the expiration of their terms, directors may continue to serve as such if reelected, but independent directors may not serve more than six years in succession.

The list of candidates for directors shall be submitted as a motion to the Shareholders' General Meeting. Other candidates for directors except for independent directors shall be nominated by the Board of Directors, the Board of Supervisors and a shareholder alone or shareholders together holding at least 3 percent of the Company's shares, and shall be elected by the Shareholders' General Meeting of the Company.

No written notice of an intent to nominate a director candidate and the willingness of such candidate to accept such nomination shall be sent prior to the date immediately following the date when the notice of the meeting for election of relevant director is sent or later than 7 days before the convening of the Shareholders' General Meeting for considering the election of such director.

The outside directors shall have sufficient time and the necessary knowledge and ability to perform their duties. The Company must provide necessary information to outside directors for performing their duties. Among them, the independent non-executive directors may directly report to the Shareholders' General Meeting, the State Council authorities in charge of securities and other relevant departments.

Executive directors shall deal with matters authorized by the Board of Directors.

Article 109.

The procedure prior to electing the Company's non-independent directors shall be as follows:

- (1) the consent of the nominee shall be obtained before the nominator nominates him or her for the position of non-independent director; the nominator(s) shall be fully aware of such details of the nominee as his or her occupation, educational background, title, career details, all of his or her concurrent positions, etc. and provide the written documents about the above-mentioned information to the Company. The candidates shall make a written commitment to the Company that they agree to accept the nomination and promise that the publicly disclosed information about candidates is true and complete, and to guarantee that they will earnestly perform their duties if being selected.

- (2) in case the candidates for non-independent directors are nominated before the convening of the board meeting, if there are relevant provisions in the applicable laws, administrative regulations and rules and/or the relevant listing rules, the written materials about the nominees described in item (1) of this Article shall be announced together with the resolution of the Board of Directors in accordance with such provisions.
- (3) if a shareholder alone or shareholders together holding at least 3 percent of the voting rights in the Company put(s) forth an extempore motion for the election of an independent non-executive director, the written notice of the intention to nominate a candidate for the position of independent non-executive director and of the nominee indicating his or her willingness to accept the nomination as well as relevant written materials on the nominee and his or her commitment as mentioned above in item (1) shall be delivered to the Company 10 days before the date of the Shareholders' General Meeting. No such written notice shall be sent prior to the date immediately following the date when the notice of the meeting for election of relevant director is sent or later than 7 days before the convening of the Shareholders' General Meeting for considering the election of such director.

Article 110. In case the Company's controlling shareholders' shareholding percentage is more than 30 percent, the cumulative voting system may be implemented for the election of directors and supervisors at a Shareholders' General Meeting, namely when more than two directors or supervisors shall be elected at the Shareholders' General Meeting, each share held by the shareholder who participates in the voting carries a number of voting rights equivalent to the number of directors or supervisors to be elected, and a shareholder may cluster or disperse his or her voting rights.

Article 111. The Chairman of the Board and the Vice Chairman of the Board shall be elected and removed by more than half of all the directors. The Chairman of the Board and the Vice Chairman of the Board shall serve terms of three years and may serve consecutive terms if reelected.

Article 112. The Board of Directors shall be accountable to the Shareholders' General Meeting and exercise the following functions and powers:

- (1) to convene Shareholders' General Meetings and to report on its work to the Shareholders' General Meeting;

- (2) to implement the resolutions of the Shareholders' General Meeting;
- (3) to decide on the business plans and investment plans of the Company;
- (4) to formulate the annual financial budgets plans and final accounts plans of the Company;
- (5) to determine the Company's annual loan financing plan;
- (6) to formulate the profit distribution plans and plans for making up losses of the Company;
- (7) to formulate plans for the Company's debt and financial policies, the increase or reduction of the registered capital of the Company and plans for the issuance of corporate bonds or other securities;
- (8) to draft plans for major acquisitions or disposals of the Company, as well as the merger, division or dissolution of the Company;
- (9) to make decision on the security not subject to the approval of the Shareholders' General Meeting, in accordance with the laws, the administrative regulations and rules, as well as these Articles of Association;
- (10) to decide on such matters as the Company's investments in third parties, purchase and sales of assets, asset mortgages, entrustment of financial services, connected transactions, etc., to the extent authorized by the Shareholders' General Meeting;
- (11) to decide on the establishment of the Company's internal management organization;

- (12) to engage or dismiss the Company's Manager; to engage or dismiss such senior management staff as the Senior Deputy Manager, the Deputy Manager, the Chief Accountant, as proposed by the Manager; to engage or dismiss the Secretary to the Board and decide on matters relating to their remuneration; to appoint or replace the members of the Board of Directors and the Board of Supervisors of the wholly-owned subsidiary; to appoint, replace or recommend the shareholder representatives, directors and supervisors of the subsidiaries controlled by it or equity affiliates;
- (13) to decide on the establishment of the Company's branches;
- (14) to formulate amendments to these Articles of Association;
- (15) to formulate the basic management systems of the Company;
- (16) to formulate the equity incentive schemes;
- (17) to make decision on the Company's other major affairs and administrative affairs, and to sign other important agreements, except for the matters to be considered at the Shareholders' General Meeting in accordance with the provisions of the Company Law and these Articles of Association;
- (18) to make decision on the matters in relation to buyback of shares of the Company under the circumstances set forth in items (5) and (6) of the Article 30;
- (19) other functions and powers provided for in these Articles of Association or granted by the Shareholders' General Meeting.

Resolutions by the Board of Directors on the matters referred to in the preceding paragraph shall be passed by the affirmative vote of not less than one half of all of the directors with the exception of resolutions on the matters referred to in items (7), (8), (9), (14), (16) and (18), which shall require the affirmative vote of at least two-thirds of all of the directors for adoption.

If a director has a connected relationship with an enterprise involved in a matter on which a resolution is to be made at a meeting of the Board of Directors, he or she may not exercise his or her right to vote regarding such resolution, nor may he or she exercise the voting right of another director as such director's proxy thereon. Under circumstance set forth above, such a Board meeting may be held only if more than one half of the directors without a connected relationship are present, and the resolutions made at such a Board meeting shall require adoption by more than one half of the directors without a connected relationship. As for the aforementioned items, which shall require the affirmative vote of at least two-thirds of all of the directors for adoption, and shall require adoption by at least two-thirds of the directors without a connected relationship. If the Board meeting is attended by less than three directors without a connected relationship, the matter shall be submitted to the Shareholders' General Meeting for consideration.

A resolution by the Board of Directors on a connected transaction shall enter into effect only once the independent non-executive directors have signed the same.

The Company shall formulate the rules for chief legal adviser, under which the chief legal adviser shall present and give legal opinions at the meeting of the Board of Directors whenever legal issue is involved in proposals for consideration and approval thereat.

Article 113. Before making decision on significant matters of the Company, the Board of Directors shall seek advice of the Party Committee.

Article 114. With the authorization made by the Board of Directors, the Chairman of the Board may exercise part of functions and powers of the Board when the Board is not in session. The content of the authorization made by the Board of Directors shall be clear and specific.

Article 115. When the Board of Directors intends to dispose of fixed assets and the sum of the expected value of the consideration for the proposed disposal and the value of the consideration for disposal of fixed assets made in the four months immediately preceding the proposed disposal exceeds 33 percent of the value of the fixed assets shown in the last balance sheet placed before the Shareholders' General Meeting, the Board of Directors may not dispose of or agree to the disposal of the fixed assets without the approval of the Shareholders' General Meeting.

For the purposes of this Article, the term "disposal of fixed assets" shall include the assignment of certain interests in assets but exclude the provision of fixed assets as security.

The validity of transactions whereby the Company disposes of fixed assets shall not be affected by the breach of the first paragraph of this Article.

Article 116. The investments (including venture capital) or the acquisition made by the Company valued at no more than 25 percent of the Company's audited total assets (or total market value) as at the most recent period shall be decided upon by the Board of Directors. The investments or acquisitions beyond the approval authority of the Board of Directors shall be reviewed by relevant experts and professionals organized by the Board of Directors and be reported to the Shareholders' General Meeting for approval.

In case the market development, M & A, the investment in new areas shall be decided by the Board of Directors, the projects whose investment or M & A of assets amounted to more than 10 percent of the total assets shall be provided with the professional advices from the social counseling agencies, as the important basis for the decisions made by the Board of Directors.

Article 117. The Chairman of the Board of the Company shall exercise the following functions and powers:

- (1) to preside over Shareholders' General Meetings and to convene and preside over meetings of the Board of Directors;
- (2) to organize the implementation of the duties of the Board of Directors; to examine the implementation of resolutions of the Board of Directors;
- (3) to sign bond certificates issued by the Company;

(4) other functions and powers granted by the Board of Directors.

The Vice Chairman of the Board of the Company shall assist the Chairman of the Board in his or her work. If the Chairman of the Board is unable to perform his or her duties or fails to perform his or her duties, his or her duties shall be performed by the Vice Chairman of the Board; if the Vice Chairman of the Board is unable or fails to perform these duties, a director elected by at least one half of the directors shall perform such duties.

Article 118.

Meetings of the Board of Directors shall be held at least four times a year. Meetings of the Board of Directors shall be convened by the Chairman of the Board by giving a notice to all directors and supervisors 14 days before the meetings are held.

The Chairman of the Board shall convene an interim meeting of the Board of Directors within 10 days without being limited by the aforementioned meeting notice period if:

- (1) it is proposed by shareholders representing at least 10 percent of the voting rights;
- (2) it is proposed by at least one-third of the directors;
- (3) it is proposed by at least one-half of the independent directors;
- (4) it is proposed by the Board of Supervisors;
- (5) it is proposed by the Manager of the Company.

The meeting of the Board of Directors in principle shall be held at the Company's domicile.

The meeting of the Board of Directors shall be held in Chinese; an interpreter may be required to bilingual impromptu translation if necessary.

The Company's outside directors shall meet with other directors annually on a regular basis without the presence of the Company's management, in order to understand the Company's operation.

Article 119. The meetings of the Board of Directors shall be noticed by way as follows:

- (1) If the Board of Directors has specified the time and place of the regular board meeting in advance, no service of notice is required.
- (2) If the Board of Directors has not specified the time and place of the regular board meeting in advance, the Chairman of the Board shall, at least 14 days in advance, inform the directors and supervisors the time and the place of the board meeting by way of telegraph, telex, fax, courier, registered mail or by specially designated person, except as otherwise provided in Article 118 of these Articles of Association.
- (3) The notice shall be written in Chinese, if necessary, the English version can be attached, including the agenda for the meeting. Any director may waive the right of receiving the notice of board meeting.

Article 120. The Board of Directors shall give a prior notice to all the executive and outside directors of any material matter to be resolved by the Board of Directors within a period required by Article 119 of these Articles of Association and provide sufficient materials with respect to such matter in strict accordance with relevant procedures. The directors may require additional materials with respect thereto. If at least one-quarter of the directors or at least two outside directors believe that the motion before the Board of Directors is unclear or unspecific, the meeting materials are insufficient or other such reason, they may jointly propose that the holding of the meeting of the Board of Directors or discussion of the motion in question be postponed to a later time. In such circumstances the Board of Directors shall accept the proposal.

Notice of a meeting shall be deemed to have been given to any director who attends the meeting without protest against, before or at its commencement, any lack of notice.

Any regular or extraordinary meeting of the Board of Directors may be held by way of telephone conference or similar communication equipment so long as all directors participating in the meeting can clearly hear and communicate with each other. All such directors shall be deemed to be present in person at the meeting.

Article 121. Meetings of the Board of Directors may be held only if not less than half of the directors (including any alternate director appointed pursuant to Article 122 of the Articles of Association) attend. Each director shall be entitled to one vote. Resolutions of the Board of Directors must be adopted by the affirmative vote of the majority of all the directors. When the numbers of votes for and against are equal, the chairman of the meeting shall be entitled to one additional vote.

Article 122. Meetings of the Board of Directors shall be attended by the directors in person. If a director is unable to attend a meeting for any reason, he or she shall appoint another director in writing to attend the meeting on his or her behalf. Such instrument of appointment shall specify the names of the proxy, the matters, and the scope of authorization and the term of validity.

If a director fails to personally attend a meeting of the Board of Directors and to appoint another director to attend the meetings on his or her behalf on two consecutive occasions, he or she shall be deemed unable to perform his or her duties and the Board of Directors shall propose to the Shareholders' General Meeting that he or she be replaced.

The director attending the meeting on behalf of the absent director shall exercise the director's right to the extent authorized. If a director fails to attend a meeting of the Board of Directors and has not appointed a proxy to attend the meeting on his or her behalf, he or she shall be deemed to have waived his or her right to vote at such meeting.

The reasonable expenses incurred by the directors who attend meetings of the board shall be borne by the Company. These expenses include the traffic expenses covering the distance between the place where a director is located and the place where a meeting is held (in the event that these two places are not the same), the fees of room and board during the term of the meeting, the rent of the place of the meeting and the local traffic expenses.

- Article 123. The Board of Directors may agree to accept a written motion instead of convening the meeting of the Board of Directors. The draft of the motion shall be served in person, by mail, telegram and fax to each director. In case that the Board of Directors has distributed the motion to all directors, the number of directors who sign on the motion reaches the quorum required by laws and the motion has been submitted to the Secretary of the Board by the abovementioned ways, the resolution shall become the resolution adopted by the Board of Directors, without convening the meeting of the Board of Directors.
- Article 124. The Board of Directors shall keep minutes of the meeting of the Board of Directors and its decisions on the matters examined without the convening of a meeting in Chinese. The directors attending the meeting shall have the right to make descriptive records of their speeches at the meeting. The opinions of the independent (non-executive) directors shall be clearly listed in the resolutions of the board of directors. The minute of each meeting of the Board of Directors shall be provided to all directors for review as soon as possible. Any director who wants to make amendment or supplement to the minute shall report the amendment to the Chairman of the Board in written form within one week upon the receipt of the minute. The directors and recorder attending the meeting shall sign on the finalized minute of the meeting. The minutes of meetings of the Board of Directors shall be kept at the Company's domicile and sent to each director in full copies as soon as possible. The minutes of meetings shall be kept for at least 10 years.
- The directors shall be liable for the resolutions of the Board of Directors. If a resolution of the Board of Directors is in violation of laws, administrative regulations or these Articles of Association, thereby causing the Company to sustain a material loss, the directors who took part in the resolution shall be liable to the Company for damages. However, if a director is proved to have expressed his or her opposition to and vote against such resolution when it was put to the vote, and such opposition is recorded in the minutes of the meeting, such director may be exempted from such liability.
- Article 125. Any written resolution not formed and signed by directors in line with the statutory procedures shall not have the legal effect of the resolution of the Board, even if every director has expressed his or her opinion in different ways.

Where a resolution of the Board of Directors is in violation of laws, administrative regulations and rules, the Company's Articles of Association or the resolution of the Shareholders' General Meeting, thereby causing serious losses to the Company, the directors who cast an affirmative vote shall be directly liable to the Company for damages. However, where a director can prove that he or she expressed his or her opposition to such resolution when it was put to be voted, and that such opposition was recorded in the minutes of the meeting, the director may be relieved from such liability; where a director abstains from voting, or is absent and does not appoint others to attend, the director may not be relieved from such liability; where a director has expressed his opposition to such resolution but does not cast a negative vote, the director also may not be relieved from such liability.

Article 126. Subject to relevant laws and administrative regulations, the Shareholders' General Meeting may remove any director by an ordinary resolution (without prejudice to any claim for damages that such director may have under any contract) before the end of his or her term of office.

Article 127. Directors may tender their resignations before the expiration of their terms of office. To resign, a director shall submit a written resignation to the Board of Directors. The independent director provide information on any circumstances related to his or her resignation or any circumstances to which he or she believes the attention of the Company and its creditors must be drawn.

If the resignation of a director causes the number of occupied seats on the Board of Directors to fall below the statutory minimum, his or her written resignation shall enter into effect only upon the new director taking up the vacancy left by his or her resignation. The remaining directors shall convene an extraordinary Shareholders' General Meeting as soon as possible to elect a director to fill the vacancy left by the resignation of the director. Until the Shareholders' General Meeting has passed a resolution on electing a director, the powers of the resigning director and the remaining directors shall be subject to reasonable restrictions.

If the resignation of an independent director causes the number of independent directors or the number of occupied seats on the Board of Directors to fall below the statutory minimum, the incumbent director shall continue to perform his or her duties as an independent director in accordance with laws, administrative regulations and these Articles of Association until the incoming director assumes his or her position. The Board of Directors shall convene a Shareholders' General Meeting within two months to re-elect the independent directors; if the Board of Directors fails to convene a shareholders' general meeting, the independent directors may not perform their duties.

Except in the circumstance specified in the preceding paragraphs, a director's resignation shall be effective upon his or her written resignation being served on the Board of Directors.

CHAPTER 12 Independent Directors

Article 128. The independent director shall loyally perform his or her duties, safeguard the interests of the Company and especially pay attention that the lawful rights and interests of the Company's shareholders of public shares are not harmed.

The independent director shall perform his or her duties and responsibilities independently, without interference from the major shareholder(s) or the actual controller of the Company, or other entities or individuals that have a material interest with the Company and its major shareholder(s) or the actual controller.

Article 129. The candidates for the Company's independent director shall be nominated by the Company's Board of Directors, Board of Supervisors and shareholders who alone or together hold at least 1 percent of the outstanding shares of the Company and shall be decided through election by the Shareholders' General Meeting.

(1) The consent of the nominee shall be obtained before the nominator nominates him or her for the position of independent director; the nominator(s) shall be fully aware of such details of the nominee as his or her occupation, educational background, title, career details, all of his or her concurrent positions, etc., and shall be liable to provide such written materials to the Company. The candidate shall make a written commitment to the Company, agree to accept the nomination, promise that the publicly disclosed information about candidates is true and complete, and to guarantee that they will earnestly perform their duties if being selected.

- (2) The nominator(s) shall express his/her/their opinions on the nominee's qualifications for holding the position of independent director and his or her independence; if otherwise provided in accordance with the applicable laws and regulations and/or relevant listing rules, the nominee shall make a public statement to the effect that no relationship exists between himself or herself and the Company that could affect his or her making independent and objective judgments.
- (3) If the candidate for the independent director is nominated before the board meeting is convened, if otherwise provided in accordance with provisions in the applicable laws and regulations and/or the listing rules or other securities laws and regulations, the written materials of the nominee described in item (1) and (2) of this Article shall be announced together with the resolution of the Board of Directors in accordance with such provisions.
- (4) If a shareholder alone or shareholders together holding at least 3 percent of the voting rights in the Company or the Board of Supervisors put (s) forth an extempore motion for the election of an independent director, the written notice of the intention to nominate a candidate for the position of independent director and of the nominee indicating his or her willingness to accept the nomination as well as relevant written materials and commitment on the nominee as mentioned in above in item (1) and (2) of this Article shall be delivered to the Company 16 days before the date of the Shareholders' General Meeting.

- (5) Prior to the holding of a Shareholders' General Meeting at which an independent director is to be elected, if otherwise provided in the applicable laws and regulations and/or relevant listing rules, the Company shall simultaneously submit the relevant materials on all the nominees to the State Council authorities in charge of securities, where the Company is located and/or the agency of the CSRC and the stock exchange on which Company shares are listed. If the Board of Directors of the Company has objections concerning the relevant details of a nominee, the Company shall additionally submit the written opinion of the Board of Directors. The nominees against whom the CSRC has objections shall not be the candidate for the independent director. At the time the Shareholders' General Meeting to elect an independent director is held, the Board of Directors of the Company shall elaborate on whether the CSRC had any objections against the candidates for the post of independent director.

Article 130.

A person holding the position of independent director shall satisfy the basic conditions set forth below:

- (1) having the qualifications to hold the position of directors of the Company in accordance with laws, administrative regulations and these Articles of Association;
- (2) having the independence required by relevant laws, administrative regulations, departmental rules and the listing rules;
- (3) having a basic knowledge of the operation of listed companies and being familiar with relevant laws, administrative rules, regulations and rules (including but not limited to the applicable accounting standards);
- (4) having at least five years of experience in law, economics or other work experience required for performing the duties and responsibilities of an independent director;
- (5) other conditions stipulated in these Articles of Association.

Article 131.

The independent director must be independent. Unless otherwise provided in the applicable laws, regulations and/or the relevant listing rules, the following persons may not serve as independent directors:

- (1) persons holding a position in the Company or a subsidiary thereof and their lineal relatives and major social relations (the lineal relatives refer to the spouse, parents and children; the major social relations refer to the brothers and sisters, father-in-law and mother-in-law, daughter-in-law, son-in-law, the spouses of brothers and sisters, as well as the spouse's brothers and sisters);
- (2) natural person shareholders who directly or indirectly hold at least 1 percent of the outstanding shares of the Company or who rank among the top ten shareholders of the Company, and their lineal relatives;
- (3) persons who hold positions in entities that directly or indirectly hold at least 5 percent of the outstanding shares of the Company or that rank among the top five shareholders of the Company, and their lineal relatives;
- (4) persons who, at any time during the immediately preceding period of one year, have fallen into any of the three categories listed above;
- (5) persons who provide financial, legal, consultancy or other such services to the Company or its subsidiaries;
- (6) other persons that the State Council authorities in charge of securities specify may not serve as an independent director.

Article 132. If an independent director fails on three consecutive occasions to personally attend a meeting of the Board of Directors, the Board of Directors shall request that the Shareholders' General Meeting replace him or her. An independent director may not be removed without cause before the expiration of his or her term, unless any of the circumstances set forth in Article 122, Clause 2, or the circumstance mentioned in the preceding paragraph or a circumstance under which a person may not hold the position of director specified in the laws, administrative regulations and rules, as well as these Articles of Association, arises. If an independent director is removed before the expiration of his or her term, the Company shall disclose his or her removal as a matter for special disclosure. If the removed independent director is of the opinion that the Company's grounds for removing him or her are not justified, he or she may make a public statement to that effect.

Article 133. In addition to the functions and powers granted to directors under the Company Law, other laws, administrative regulations and rules, as well as these Articles of Association, independent directors shall have the following special functions and powers:

- (1) the material connected transactions (as determined based on the criteria issued by the competent regulator from time to time) shall be reviewed by the Board of Directors or the Shareholders' General Meeting in accordance with laws, regulations and/or the relevant listing rules; the engagement or dismissal of an accounting firm; in case there are relevant provisions in the applicable laws, regulations and/or the relevant listing rules, it shall be submitted to the Board of Directors for discussion after being approved by not less than 50 percent of the independent directors in accordance with such provisions. A resolution by the Board of Directors on a connected transaction shall enter into effect only once the independent directors have signed the same. Before rendering their judgment, independent directors may engage an intermediary organization to issue an independent financial consultant report for use as a basis for rendering their judgment;
- (2) proposing the engagement or dismissal of an accounting firm to the Board of Directors;
- (3) proposing to the Board of Directors the calling of an extraordinary Shareholders' General Meeting;

- (4) proposing the calling of meetings of the Board of Directors;
- (5) independently engaging external auditors and consultants;
- (6) openly soliciting shareholders' voting rights before the holding of a Shareholders' General Meeting;
- (7) directly reporting to the Shareholders' General Meeting, the State Council authorities in charge of securities and other relevant departments.

An independent director shall obtain the consent of at least half of the independent directors before exercising the aforementioned functions and powers in items (2), (3), (4), (6), and (7) and shall obtain the consent of all independent directors before exercising the aforementioned functions and powers in item (5).

The expenses incurred by independent directors in independently engaging external auditors and consultants, and carrying out audit and consulting for the specific matters of the Company shall be borne by the Company.

Article 134.

In addition to performing the duties and responsibilities mentioned above, independent directors shall express their independent opinions to the Board of Directors or the Shareholders' General Meeting on the following matters:

- (1) the nomination or removal of directors;
- (2) the engagement or dismissal of senior management staff;
- (3) the remuneration of the Company's directors and senior management staff;
- (4) matters which may, in an independent director's opinion, harm the rights and interests of small and medium shareholders;
- (5) major financial transactions that occur between the Company and the shareholders or its affiliates;

- (6) the failure by the Board of Directors to prepare a plan for the distribution of profits in cash;
- (7) other matters specified in the applicable laws and regulations, as well as these Articles of Association.

Concerning the aforementioned matters, independent directors shall express one of the following opinions: consenting opinions; qualified opinions, and the reasons therefor; opposing opinions, and the reasons therefor; disclaimer of opinion, and an explanation of the impediments.

Article 135. The independent director shall attend the meeting of the Board of Directors on time, understand the Company's production and operation, and actively investigate and obtain the conditions and information required by making decisions. The independent director shall submit the annual report of all independent directors to the Shareholders' General Meeting of the Company and to elaborate on the performance by the independent directors of their duties and responsibilities.

Article 136. The Company shall establish the work system of independent directors; the Secretary to the Board of Directors shall actively cooperate with the independent directors to perform their duties and responsibilities. The Company shall ensure that the independent directors enjoy the same right to know as other directors, timely provide relevant materials and information to the independent directors, regularly report the Company's operation and organize the independent directors to make field survey if necessary.

CHAPTER 13 Secretary to the Board of Directors

Article 137. The Company shall have a Secretary to the Board of Directors. The Secretary to the Board of Directors shall be a member of the senior management staff of the Company and the Board of Directors shall establish the working office of the Board Secretary, if necessary.

Article 138. The Secretary to the Board of Directors shall be a natural person with the necessary professional knowledge and experience. He or she shall be appointed by the Board of Directors.

His or her main duties shall be as set forth below:

- (1) to assist the directors with their handling of the day-to-day business of the Board of Directors; to provide the directors with, remind the directors of, and ensure that the directors are aware of, the domestic and foreign regulators' regulations, policies and requirements in respect of the operation of companies; and to assist the directors and the Manager in their compliance with domestic and foreign laws, these Articles of Association and other relevant regulations when they are exercising their functions and powers;
- (2) to be responsible for organizing and preparing the documents of the Board of Directors and the Shareholders' General Meeting; to duly keep meeting minutes; to ensure that decisions made at meetings are made in accordance with statutory procedure and to keep abreast of the implementation of the resolutions of the Board of Directors;
- (3) to be responsible for arranging and coordinating the disclosure of information, coordinating the relationship with investors and enhancing the transparency of the Company;
- (4) to participate in arranging capital market financing;
- (5) to handle relations with intermediary organizations, regulators and the media, and to coordinate public relations.

The scope of the duties and responsibilities of the Secretary to the Board of Directors shall be as set forth below:

- (1) to arrange and make preparations for meetings of the Board of Directors and Shareholders' General Meeting, to prepare meeting materials, to arrange relevant meeting affairs, to be responsible for meeting minutes, to ensure the accuracy of such minutes, to keep meeting documents and minutes, to actively keep abreast of the implementation of relevant resolutions; to report major issues encountered in the course of implementation to the Board of Directors and to provide recommendations in respect thereof.

- (2) to ensure that the material matters on which the Board of Directors of the Company has reached decisions are carried out in strict accordance with the prescribed procedure; at the request of the Board of Directors, to participate in and arrange for advice and analysis of matters on which the Board of Directors is to make decisions and put forward pertinent opinions and recommendations; to handle, upon appointment, the day to day work of the Board of Directors and its relevant committees.
- (3) as the contact person between the Company and the securities regulator, to be responsible for arranging for the preparation and timely delivery of the documents requested by the regulator and to be responsible for accepting the relevant tasks assigned by the regulator and arranging for their completion.
- (4) to be responsible for coordinating and arranging information disclosures by the Company and the establishment of a sound information disclosure system, to attend all Company meetings relating to information disclosure and to be aware at all times of the Company's material business decisions and relevant information and data.
- (5) to be responsible for the work associated with maintaining the confidentiality of the Company's price sensitive information and to formulate a practical and effective confidentiality system and measures; where Company price sensitive information is leaked for any reason, to take the necessary remedial measures, to timely explain and clarify the same and inform the regulator of the place where Company shares are listed abroad and the CSRC.
- (6) to be responsible for the coordination and organization of the market promotion, coordinating the visiting reception, dealing with the investor relations, maintaining the relationship with the investors, intermediaries and the media, coordinating to answer the public's questions, ensuring that the investors may obtain the information disclosure matters of the Company in time; to be responsible for the promotion and propaganda activities of the Company inside and outside China, preparing summary reports on the market promotion and activities such as major inviting, and organizing the relevant matters of report to the CSRC.

- (7) to be responsible for the management and conservation of the Company's register of shareholders, register of directors, the materials about the number of shares held by major shareholders and director equity records, as well as the list of creditors of the Company's outstanding debentures.
- (8) to assist the directors and the Manager in their compliance with domestic and foreign laws, these Articles of Association and other relevant regulations when they are exercising their functions and powers; when he or she becomes aware that the Company has adopted or could adopt a resolution that violates relevant regulations, he or she is under obligation to timely make the same known and has the right to truthfully report the same to the CSRC and other regulators.
- (9) to coordinate the provision of necessary information and data to the Company's Board of Supervisors and other review organizations when they are performing their monitoring functions and to assist in the investigations on the performance by the Company's Financial Controller, the Company's directors and the Manager of their fiduciary duties.
- (10) to perform other functions and powers granted by the Board of Directors and other functions and powers required by laws of the place where Company shares are listed or by relevant rules of the Stock Exchange.

Article 139. Directors or other senior management staff of the Company may concurrently hold the office of Secretary to the Board of Directors. No accountant of an accounting firm engaged by the Company may concurrently hold the office of Secretary to the Board of Directors.

If the office of Secretary to the Board of Directors is held by a director of the Company and a certain act is to be done by a director and the Secretary to the Board of Directors separately, the person who concurrently holds the offices of director and Secretary to the Board of Directors may not perform the act in both capacities.

Article 140. The Secretary to the Board of Directors shall comply with the relevant provisions of these Articles of Association to perform his or her duties diligently.

The Secretary to the Board of Directors shall assist the Company in compliance with China's relevant laws and the rules of the Stock Exchange where the Company's shares are listed.

CHAPTER 14 Manager

Article 141. The Company has a manager, who shall be engaged or dismissed by the Board of Directors.

The Company shall have one Senior Deputy Manager, several Deputy Managers and one Chief Financial Officer to assist the Manager's work. The Senior Deputy Manager, Deputy Manager and Chief Financial Officer shall be nominated by the Manager and engaged or dismissed by the Board of Directors.

A director can be engaged as the part-time Manager or other senior management staff; however, the number of the directors serving as the part-time Manager or other senior management staff shall not exceed one half of the Company's total number of directors.

Article 142. The Manager shall serve terms of three years and may serve consecutive terms if reappointed.

Article 143. The Manager shall be accountable to the Board of Directors and exercise the following functions and powers:

- (1) to be in charge of the production, operation and management of the Company, to organize the implementation of the resolutions of the Board of Directors;
- (2) to arrange for the implementation of the Company's annual business plans and investment plans;
- (3) to draft the plan for establishment of the Company's internal management organization;
- (4) to draft the plan for establishment of management organization of the Company's branch offices;
- (5) to draft the Company's basic management system;
- (6) to formulate the basic rules and regulations of the Company;

- (7) to request the Board of Directors to engage or dismiss the Company's Senior Deputy Manager, Deputy Manager, Chief Financial Officer;
- (8) to engage or dismiss management personnel other than those to be engaged or dismissed by the Board of Directors;
- (9) to propose the holding of interim meetings of the Board of Directors;
- (10) other functions and powers granted by the Company's Articles of Association or the Board of Directors.

Article 144. The Manager shall timely report on the execution and performance of material contracts of the Company, on the application of funds and on profits and losses to the Board of Directors or at the request of the Board of Supervisors. The Manager shall ensure the truthfulness of such reports.

Article 145. The Manager who is not a director has the right to attend the meetings of the Board of Directors and to receive notice of or other information concerning any meetings; the manager who is not a director has no voting right.

Article 146. In the exercise of his or her functions and powers, the Manager and other senior management staff shall not change the resolutions of the Shareholders' General Meeting and the Board of Directors or exceed the scope of authorization.

Article 147. In the exercise of his or her functions and powers, the Manager and other senior management staff shall perform a fiduciary duty and an obligation of diligence in accordance with the laws, administrative regulations and rules, as well as these Articles of Association.

Article 148. The Manager and other senior management staff may tender his or her resignation to the Board of Directors in written form three months in advance; the department manager may tender his or her resignation to the Manager in written form two months in advance.

CHAPTER 15 Board of Supervisors

Article 149. The Company shall have a Board of Supervisors. The Board of Supervisors is a regular supervisory department established by the Company. It is responsible for supervising the Board of Directors and its members, as well as the Manager and other senior management staff to prevent them from abusing their powers, or infringing the legal interests of shareholders, the Company, and employees of the Company.

Article 150. The Board of Supervisors shall consist of five supervisors. The external supervisors (refer to those supervisors who do not hold office in the Company, the same below) shall represent not less than 50 percent of the members of the Board of Supervisors. The number of the supervisors who represent the employees shall be not less than one-third of the number of supervisors. The term of office of a supervisor shall be 3 years. A supervisor may serve consecutive terms if re-elected upon the expiration of his or her term.

The Board of Supervisors shall have one chairman. The appointment and dismissal of the Chairman of the Board of Supervisors shall be subject to the affirmative vote of at least two-thirds of the members of the Board of Supervisors.

The chairman of the Board of Supervisors shall organize the performance of the duties of the Board of Supervisors.

Article 151. The members of the Board of Supervisors include three shareholder representatives (including qualified as outside supervisors, the same below) and two employee representatives who represents the employees. The shareholder representative shall be elected and removed by the Shareholders' General Meeting; the employee representative shall be elected and removed by the employees' democratic election.

As needed, the Board of Supervisors shall establish an office to be responsible for the daily affairs of the Board of Supervisors.

- Article 152. The list of candidates for the position of supervisors who represent the shareholders shall be put in the form of a motion before the Shareholders' General Meeting for resolution. The candidates for the supervisors who represent the shareholders shall be nominated by the Board of Directors, the Board of Supervisors and a shareholder alone or shareholders together holding at least 3 percent of the Company's shares, and shall be elected and removed by the Shareholders' General Meeting of the Company. The procedures for electing supervisors shall refer to the procedures for electing non-independent directors in Article 109 of these Articles of Association and the provision of adopting the cumulative voting system for electing supervisors in Article 110 of these Articles of Association.
- Article 153. The Company's Directors, Manager and other senior management staff may not concurrently serve as supervisors.
- Article 154. The meeting of the Board of Supervisors shall be convened at least once every six months. The chairman of the Board of Supervisors shall convene and preside over meetings of the Supervisory Board. If the chairman of the Supervisory Board is unable or fails to perform his or her duties, a supervisor jointly selected by at least one half of the supervisors shall convene and preside over a meeting. The notice for convening a meeting of the Board of Supervisors shall be served to all supervisors 10 days before the meeting in written form. A notice of a meeting of the Board of Supervisors shall include the following particulars:
- (1) the date, venue and duration of the meeting;
 - (2) the reasons for holding the meeting and the topics to be discussed thereat;
 - (3) the date of issuance of the notice.
- Article 155. If a supervisor fails to personally attend a meeting of the Board of Supervisors and to appoint another supervisor to attend the meetings on his or her behalf on two consecutive occasions, he or she shall be deemed unable to perform his or her duties and shall be replaced by the Shareholders' General Meeting and the employee representative congress.

Article 156. The supervisor may tender his or her resignation before the end of his or her term. The provisions concerning the duration and resignation of the directors in CHAPTER 11 of these Articles of Association are applicable to the supervisors.

Article 157. The Board of Supervisors shall be accountable to the Shareholders' General Meeting and exercise the following functions and powers in accordance with laws:

- (1) to examine the Company's financial affairs; to review the report prepared by the Board of Directors periodically and submit the audit opinions in written form;
- (2) to supervise the directors, the Manager and other senior management staff in the performance of their Company duties and to propose the removal of directors or senior management staff who violate laws, administrative regulations or breach these Articles of Association or resolutions of the Shareholders' General Meeting;
- (3) if an act of a director or of the Manager or another senior officer is detrimental to the Company's interests, to require him or her to correct such act;
- (4) to verify financial information such as financial reports, business reports, profit distribution plans, etc. that the Board of Directors intends to submit to the shareholders' general meeting and, if in doubt, to be able to appoint, in the name of the Company, a registered accountant or practicing auditor to assist in reviewing such information;
- (5) to conduct an investigation and, if necessary, engage professional organizations, such as accounting firms and law firms, to assist it in its work in the event that it discovers any irregularities in the Company's operations, the expenses shall be borne by the Company;
- (6) to propose the holding of Extraordinary Shareholders' General Meetings and, in the event that the Board of Directors fails to perform its duty of convening and presiding over a Shareholders' General Meeting, to convene and preside over such a meeting in accordance with the law;
- (7) to propose the interim meeting of the Board of Directors;

(8) to negotiate with or to file a suit against any director or other senior management staff on behalf of the Company;

(9) Other duties as prescribed in the laws, administrative regulations and rules, as well as the Articles of Association and authorized by the Shareholders' General Meeting.

The Board of Supervisors shall give advice for the accounting firm engaged by the Company. It may appoint a separate accounting firm in the Company's name to independently review the Company's finances if necessary and directly report to the State Council authorities in charge of securities and other relevant departments.

The outside supervisors shall independently report the integrity and diligence performance of the Company's senior management staff to the Shareholders' General Meeting.

Supervisors may attend meetings of the Board of Directors in a non-voting capacity and raise questions and make suggestions in respect of matters that are the subject of resolutions of the Board of Directors.

Article 158. The Board of Supervisors may require the Company's directors, the Manager, chief financial officer, the secretary to the Board of Directors, the internal and external auditors to attend the meetings of the Board of Supervisors and answer the issues concerned by Board of Supervisors.

Article 159. Resolutions of the Board of Supervisors shall require the affirmative vote of at least two-thirds of the members of the Board of Supervisors for adoption.

Article 160. The minutes of the meeting shall be kept as the Company's records of meetings by the Board of Supervisors. The supervisors and recorder attending the meeting shall sign on the finalized minute of the meeting. The minutes of meetings of the Board of Supervisors shall be kept as the Company's important files. The minutes of meetings shall be kept for at least 10 years.

Article 161. When the Board of Supervisors exercises its functions and powers with the engagement of the lawyers, certified public accountants, practicing auditors and other professionals, the reasonable expenses incurred shall be borne by the Company.

Article 162. The supervisors shall faithfully fulfill its oversight responsibilities in accordance with the laws and administrative regulations and rules, as well as these Articles of Association.

CHAPTER 16 Qualifications and Obligations of the Directors, Supervisors, Manager and Other Senior Management Staff of the Company

Article 163. None of the following persons may serve as a director, supervisor, manager or other senior management staff of the Company:

- (1) persons without capacity or with limited capacity for civil acts;
- (2) persons who were sentenced to criminal punishment for the crime of corruption, bribery, misappropriation of property or diversion of property or for disrupting the order of the socialist market economy, where not more than five years have elapsed since the expiration of the period of punishment; or persons who were deprived of their political rights for committing a crime, where not more than five years have elapsed since the expiration of the period of deprivation;
- (3) persons who served as directors, or factory directors or managers, who bear personal liability for the bankruptcy liquidation of their companies or enterprises, where not more than three years have elapsed since the date of completion of the bankruptcy liquidation;
- (4) persons who served as the legal representatives of companies or enterprises that had their business licenses revoked for breaking the law, where such representatives bear individual liability therefor and not more than three years have elapsed since the date of revocation of the business license;
- (5) persons with comparatively large debts that have fallen due but have not been settled;
- (6) persons whose cases have been placed on the docket and are being investigated by the judicial authorities because they violated the criminal law, and such cases are still pending;
- (7) national civil servants;

- (8) persons who may not serve as leaders of enterprises by virtue of laws;
- (9) persons who are non-natural persons;
- (10) persons ruled by a competent authority to have violated securities-related regulations, where such violation involved fraudulent or dishonest acts and not more than five years have elapsed since the date of the ruling;
- (11) persons who are determined to be banned from entering the securities market by the State Council authorities in charge of securities and whose ban has not been lifted;
- (12) persons who may not serve as a director, supervisor, manager or other senior management staff of the Company by virtue of laws and regulations of the State and the Listing Rules.

As for the current directors, under the above circumstance set forth above, the Board of Directors shall immediately stop relevant directors from performing their duties since the date of knowing the situation occurred, and advice the Shareholders' General Meeting to replace such directors. As for the Manager, the Board of Directors shall immediately stop relevant Manager from performing his or her duties since the date of knowing the situation occurred, and convene the meeting of the Board of Directors to dismiss such Manager. As for the current supervisors, under the above circumstance set forth, the Board of Directors shall immediately stop relevant supervisors from performing their duties since the date of knowing the situation occurred, and advice the Shareholders' General Meeting or the employee representative congress to replace such supervisors.

Article 164.

No director may act on behalf of the Company or the Board of Directors in his or her own name unless these Articles of Association specify that he or she may do so or he or she is lawfully authorized to do so by the Board of Directors. A director shall declare his or her position and capacity in advance if, when such director is acting in his or her private capacity, a third party would reasonably assume him or her to be acting on behalf of the Company or the Board of Directors.

- Article 165. The validity of an act of a director, the Manager or other senior management staff of the Company on behalf of the Company shall not, vis-à-vis a bona fide third party, be affected by any non-compliance in his or her holding of such office, election or qualification.
- Article 166. In addition to obligations imposed by laws, the administrative rules and regulations as well as the listing rules of the stock exchanges on which shares of the Company are listed, the Company's directors, supervisors, Manager and other senior management staff shall owe each shareholder the following obligations in the exercise of the functions and powers granted to them by the Company:
- (1) not to cause the Company to exceed the scope of business stipulated in its business license;
 - (2) to act honestly in the best interest of the Company;
 - (3) not to deprive the Company of its property in any way, including (but not limited to) any opportunities that are advantageous to the Company;
 - (4) not to deprive shareholders of their individual rights and interests, including (but not limited to) rights to distributions and voting rights, unless pursuant to a restructuring of the Company submitted to and adopted by the Shareholders' General Meeting in accordance with these Articles of Association of the Company;
 - (5) the obligations required by the laws of the place where Company shares are listed and relevant provisions of the stock exchange.
- Article 167. The Company's directors, supervisors, Manager and other senior management staff shall have an obligation, in the exercise of their rights or discharge of their obligations, to perform their acts with the care, diligence and skill that a reasonably prudent person should exercise in comparable circumstances, including but not limited to the relevant Professional Moralities and Code of Conduct for employees developed by the Company.

Article 168.

The Company's directors, supervisors, Manager and other senior management staff must, in the performance of their duties and responsibilities, abide by the fiduciary principle and shall not place themselves in a position where their personal interests and their duties may conflict. This principle shall include but not be limited to the fulfillment of the following obligations:

- (1) to act honestly in the best interest of the Company;
- (2) to exercise powers within the scope of their functions and powers and not to exceed such powers;
- (3) to personally exercise the discretion vested in him or her and not allow himself or herself to be manipulated by another person and, unless permitted by laws, administrative regulations or with the informed consent of the Shareholders' General Meeting, not to delegate the exercise of his or her discretion;
- (4) to accord equal treatment to shareholders of the same class and fair treatment to shareholders of different classes;
- (5) not to conclude a contract or enter into a transaction or arrangement with the Company except as otherwise provided in these Articles of Association or with the informed consent of the Shareholders' General Meeting;
- (6) not to use Company property for his or her own benefit in any way without the informed consent of the Shareholders' General Meeting;
- (7) not to use his or her functions and powers as a means to accept bribes or other forms of illegal income, and not to illegally appropriate Company property in any way, including (but not limited to) any opportunities that are advantageous to the Company;
- (8) not to accept commissions in connection with Company transactions without the informed consent of the Shareholders' General Meeting;

- (9) to abide by these Articles of Association, to perform his or her duties faithfully, to protect the interests of the Company, and not to use his or her position, functions and powers in the Company to seek personal gain;
- (10) not to compete with the Company in any way without the informed consent of the Shareholders' General Meeting;
- (11) not to divert Company funds, not to deposit Company assets or funds in accounts opened in his or her own or in another name; not to lend Company funds to others, and not to use Company property as security for the debts of other individuals without the consent of the Shareholders' General Meeting or Board of Directors;
- (12) without the informed consent of the Shareholders' General Meeting, not to disclose confidential information relating to the Company that was acquired by him or her during his or her tenure; and not to use such information except in the furtherance of the interests of the Company; however, such information may be disclosed to a court or other competent government authorities if:
- i. provided for by laws;
 - ii. required in the public interest;
 - iii. required in the personal interest of such director, supervisor, Manager or other senior management staff of the Company.

Income derived by the directors, Manager and other senior management staff in breach of this Article shall belong to the Company; and they shall be held liable for damages if, as a result of violating a regulation, they cause the Company to sustain a loss.

Article 169.

In case the Shareholders' General Meeting requires the directors, supervisors, Manager and senior management staff to attend the meeting, the directors, supervisors, Manager and senior management staff shall provide explanations in response to the queries and suggestions made by shareholders at a Shareholders' General Meeting, unless a matter involves trade secrets of the Company that cannot be disclosed at a Shareholders' General Meeting.

The directors, Manager and senior management staff shall provide true information and data to the Board of Supervisors and not interfering with the Board of Supervisors or supervisors in the exercise of their functions and powers.

Article 170. A director, a supervisor, the Manager or other senior management staff of the Company may not incite the following persons or organizations (“**connected persons**”) to do what such director, supervisor, manager or other senior management staff may not do:

- (1) the spouse or a minor child of such director, supervisor, Manager or other senior management staff of the Company;
- (2) a trustee of such director, supervisor, Manager or other senior management staff of the Company or of any person referred to in item (1) hereof;
- (3) a partner of such director, supervisor, Manager or other senior management staff of the Company or of any person referred to in items (1) and (2) hereof;
- (4) a company over which such director, supervisor, Manager or other senior management staff of the Company, alone or jointly with any person referred to in items (1), (2) and (3) hereof or any other director, supervisor, Manager or other senior management staff of the Company, has de facto control;
- (5) a director, a supervisor, the Manager or other senior management staff of a company being controlled as referred to in item (4) hereof.

Article 171. If a director, a supervisor, the Manager and other senior officer tender his or her resignations or his or her term of office expires, the fiduciary obligation of the Company’s directors, supervisors, Manager and other senior management staff do not necessarily cease with the termination of their tenure. A director, the supervisor, the Manager and other senior officer’s obligation to maintain the confidentiality of the Company’s trade secrets shall survive the end of his or her term, until such secrets enter the public domain. The term of survival of his or her other obligations shall be decided upon according to the principle of fairness, the time elapsed between the director’s departure from office and the occurrence of the event, and the circumstances and conditions of the termination of his or her relationship with the Company.

Article 172. A director, a supervisor, the Manager or other senior officer who causes the Company to sustain a loss as a result of a violation of a law, administrative regulations and rules, department rules or a breach of these Articles of Association by him or her during the performance of his or her Company duties shall be liable for damages.

A director, a supervisor, the Manager or other senior officer who causes the Company to sustain a loss due to his or her unauthorized departure from office prior to the end of his or her term shall be liable for damages.

Article 173. A director, a supervisor, the Manager or other senior management staff of the Company may, by informed decision of the Shareholders' General Meeting, be relieved from liability for a specific breach of his or her obligations, except in circumstances as specified in Article 58 of the Articles of Association.

Article 174. If a director, a supervisor, the Manager or other senior management staff of the Company is, directly or indirectly, materially interested in a contract, transaction or arrangement concluded or planned by the Company (excluding his or her engagement contract with the Company), he or she shall disclose the nature and extent of his or her interest to the Board of Directors at the earliest opportunity, whether or not the matter is normally subject to the approval of the Board of Directors.

A director may not vote on any contract, transaction or arrangement in which he or she or any close associate connected to him or her (as defined in the applicable securities listing rules amended from time to time) has a material interest and which is to be approved by the Board of Directors or any other proposals related thereto. Additionally, he or she may not count in the quorum for the meeting.

Unless the interested director, supervisor, Manager or other senior management staff of the Company has disclosed such interest to the Board of Directors as required under the first paragraph hereof and the matter has been approved by the Board of Directors at a meeting in which he or she was not counted in the quorum and had refrained from voting, the Company shall have the right to void the contract, transaction or arrangement, unless the other party is a bona fide party acting without knowledge of the breach of obligation by the director, supervisor, Manager or other senior management staff concerned.

A director, a supervisor, the Manager or other senior management staff of the Company shall be deemed to be interested in any contract, transaction or arrangement in which a connected person of that director, supervisor, Manager or other senior management staff is interested.

Article 175. If a director, a supervisor, the Manager or other senior management staff of the Company gives a written notice to the Board of Directors before the conclusion of the contract, transaction or arrangement is first considered by the Company stating that, by reason of the contents of the notice, he or her is interested in the contract, transaction or arrangement that may subsequently be made by the Company, such director, supervisor, Manager or other senior management staff of the Company shall be deemed for the purposes of the preceding Articles of this Chapter to have declared his interest, to the extent stated in the notice.

Article 176. The Company may not in any manner pay tax on behalf of its directors, supervisors, Manager or other senior management staff.

Article 177. The Company may not directly or indirectly provide a loan to, or loan guarantees for, its directors, supervisors, Manager and other senior management staff or those of its parent company, or provide loans to or loan guarantees for connected persons of the above-mentioned persons.

The provisions of the preceding paragraph shall not apply to the following circumstances:

- (1) the provision by the Company of a loan to or a loan guarantee for a subsidiary of the Company;
- (2) the provision by the Company of a loan, loan guarantee or other moneys to a director, a supervisor, the Manager or other senior management staff of the Company under an engagement contract approved by the Shareholders' General Meeting, so as to enable him to meet the expenses incurred for the purposes of the Company or for the performance of his or her Company duties;

(3) the provision by the Company of a loan or a loan guarantee to a relevant director, a supervisor, the Manager or other senior management staff of the Company or to a connected person thereof on normal commercial terms, if the ordinary scope of business of the Company includes the lending of money or the provision of loan guarantees.

Article 178. A loan provided by the Company in breach of the preceding Article shall be immediately repaid to the Company by the recipient of the loan, regardless of the terms of the loan.

Article 179. A loan guarantee provided by the Company in breach of the first paragraph of Article 177 shall be unenforceable against the Company, unless:

(1) the loan was provided to a connected person of a director, a supervisor, the Manager or other senior management staff of the Company or of its parent company, and at the time the loan was advanced the lender did not know the relevant circumstances;

(2) the collateral provided by the Company has been lawfully sold by the lender to a bona fide purchaser.

Article 180. For the purposes of the preceding Articles of this Chapter, the term “guarantee” shall include an act whereby the guarantor assumes liability or provides property to guarantee or secure the performance of obligations by the obligor.

Article 181. Following the approval of the Shareholders’ General Meeting, the Company may purchase liability insurances for the directors, supervisors, Manager and other senior management staff, unless the liability is caused by the violation of the laws, administrative regulations and rules, as well as these articles of association by the Company’s directors, supervisors, the Manager or other senior management staff.

Article 182. If a director, a supervisor, the Manager or other senior management staff of the Company breaches his or her obligations to the Company, the Company shall, in addition to any rights and remedies provided by laws or administrative rules and regulations, have the right to:

- (1) require the relevant director, supervisor, Manager or other senior management staff to compensate for the losses sustained by the Company as a consequence of his or her dereliction of duty;
- (2) rescind any contract or transaction concluded by the Company with the relevant director, supervisor, Manager or other senior management staff and contracts or transactions with a third party (where such third party is well aware or should know that the director, supervisor, Manager or other senior management staff representing the Company was in breach of his or her obligations to the Company);
- (3) require the relevant director, supervisor, Manager or other senior management staff to surrender the gains derived from the breach of his or her obligations;
- (4) recover any moneys received by the relevant director, supervisor, Manager or other senior management staff that should have been received by the Company, including (but not limited to) commissions;
- (5) require the relevant director, supervisor, Manager or other senior management staff to return the interest earned or possibly earned on the moneys that should have been given to the Company.

Article 183.

The Company shall conclude written contracts with each director and supervisor of the Company concerning his or her remuneration. Such contracts shall be approved by the Shareholders' General Meeting before they are entered into. The aforementioned remuneration shall include:

- (1) remuneration in respect of his or her service as a director, supervisor or senior management staff of the Company;
- (2) remuneration in respect of his service as a director, supervisor or senior management staff of a subsidiary of the Company;
- (3) remuneration for other services provided toward the management of the Company or a subsidiary thereof;

(4) the payment by way of compensation for his or her loss of office or retirement to the aforementioned directors and supervisors in respect of redundancy or retirement.

A director or supervisor may not sue the Company for benefits due to him or her on the basis of the aforementioned matters, except under a contract as mentioned above.

Article 184. The Company shall specify in the contract concluded with a director or supervisor of the Company concerning his or her remuneration that in the event of a takeover of the Company, a director or supervisor of the Company shall, subject to prior approval of the Shareholders' General Meeting, have the right to receive the compensation or other moneys obtainable for loss of office or retirement. For the purposes of the preceding paragraph, the term "a takeover of the Company" shall mean either of the following:

- (1) anyone making a purchase offer to all of the shareholders;
- (2) anyone making a purchase offer with a view to the offeror becoming a controlling shareholder as defined in the Article 59 of these Articles of Association.

If the relevant directors or supervisors have failed to comply with this Article, any sums received by themselves shall belong to those persons that have sold their shares as a result of their acceptance of the aforementioned offer, and the expenses incurred in the pro rata distribution of such sums shall be borne by the relevant directors or supervisors and may not be paid out of such sums.

CHAPTER 17 Financial and Accounting Systems, Distribution of Profits, Auditing

Article 185. The Company shall formulate its own financial and accounting systems in accordance with laws, administrative regulations and China's accounting standards formulated by the State Council's department in charge of finance.

Article 186. The Company shall adopt the Gregorian calendar year as its fiscal year, which shall commence on January 1 and end on December 31 of the same Gregorian calendar year.

The Company shall adopt the Renminbi as its bookkeeping base currency and its account books shall be kept in Chinese.

The Company shall prepare financial reports at the end of each fiscal year. Such reports shall be audited by an accounting firm in accordance with the laws.

Article 187. The Board of Directors of the Company shall place before the shareholders at each annual Shareholders' General Meeting such financial reports as relevant laws, administrative regulations and normative documents promulgated by the local government and the authorities-in-charge require the Company to prepare. Such reports shall be subject to verification.

Article 188. The financial reports of the Company shall be made available for inspection by shareholders 20 days prior to an annual Shareholders' General Meeting. Each shareholder of the Company shall have the right to obtain a copy of the financial reports referred to in this Chapter.

The Company will send the aforementioned financial reports to each holder of H shares by prepaid mail at the recipient's address shown in the register of shareholders at least 21 days prior to an annual Shareholders' General Meeting.

Subject to the laws, regulations and listing rules of the place where Company's shares are listed, the aforementioned financial reports may be provided to shareholders by other means as specified in Article 236 of these Articles of Association.

Article 189. The financial statements of the Company shall be prepared not only in accordance with PRC accounting standards and regulations but also in accordance with international accounting standards or the accounting standards of the place outside the PRC where shares of the Company are listed. If there are material differences in the financial statements prepared in accordance with these two sets of accounting standards, such differences shall be stated in the notes to such financial statements. For purposes of the Company's distribution of after-tax profits of a given fiscal year, the lesser of the amounts of after-tax profits shown in the aforementioned two kinds of financial statements shall govern.

Article 190. Interim results or financial information published or disclosed by the Company shall be prepared in accordance with PRC accounting standards and regulations as well as international standards or the accounting standards of the place outside the PRC where shares of the Company are listed.

- Article 191. The Company shall publish four financial reports every fiscal year, namely an Q1 financial report within 30 days after the end of the first three months of the fiscal year, an interim financial report within 60 days after the end of the first six months of the fiscal year, an Q3 financial report within 30 days after the end of the first nine months of the fiscal year and an annual financial report within 120 days after the end of the fiscal year.
- Article 192. The Company's financial and accounting reports shall be prepared in accordance with relevant laws, administrative regulations and departmental rules.
- Article 193. The Company may not keep account books other than the statutory account books.
- Article 194. The basic principles of profit distribution policy of the Company are as follows:
- (1) taking full account of return to investors and distributing dividend to shareholders per annum in proportion to the distributable dividend realized for the year concerned;
 - (2) maintaining the continuity and stability of the Company's dividend distribution policy, while at the same time take care of the interest of the Company in the long term, the interest of the shareholders as a whole, as well as the sustainable development of the Company;
 - (3) giving priority to dividend distribution in cash.
- Article 195. When the Company distributes its after-tax profits for a given year, it shall allocate 10 percent of profits to its statutory common reserve. The Company shall no longer be required to make allocations to its statutory common reserve once the aggregate amount of such reserve reaches at least 50 percent of its registered capital.
- If the Company's statutory common reserve is insufficient to make up losses from previous years, the Company shall use its profits from the current year to make up such losses before making the allocation to its statutory common reserve in accordance with the preceding paragraph.

After making the allocation from its after-tax profits to its statutory common reserve as well as statutory public welfare fund, the Company may, subject to a resolution of the Shareholders' General Meeting, make an allocation from its after-tax profits to the discretionary common reserve.

After the Company has made up its losses and made allocations to its common reserves, the remaining profits of the Company shall be distributed in proportion to the shareholdings of its shareholders. Shares of the Company that are held by the Company itself shall not participate in the distribution of profits.

Article 196. Before making up its losses and made allocations to the statutory common reserve, the Company shall not distribute dividends or distribute profits to shareholders. The Company's dividend does not bear any interest, unless the Company fails to distribute relevant dividends to the shareholders.

Any amount paid up in advance of calls on any share may carry interest but shall not entitle the holder of the share to participate in respect thereof in a dividend subsequently declared.

Article 197. The capital common reserve shall include the following funds:

- (1) the premiums obtained from the issue of shares above par;
- (2) other revenue required by the State Council's finance authority to be included in the capital common reserve.

Article 198. The Company's common reserves (referring to the statutory reserve fund, any fund and capital fund) shall be used to make up the Company's losses, to expand the Company's production and operations or, through conversion into capital, to increase the Company's capital. However, the capital common reserve will not be used to make up the Company's losses.

When funds in the statutory common reserve are converted into capital by the Company through the resolution at the Shareholders' General Meeting, the new shares shall be issued according to the original proportion of shares held by the shareholders, or the par value of shares shall be increased. However, in case that the statutory common reserve are converted into capital, the remaining of the reserve shall not be less than 25 percent of the registered capital of the Company before the conversion.

Dividend distribution policies of the Company are to be specified as follows:

- (1) dividend shall be distributed in the following manner: the Company may distribute dividends in cash, in shares or in a combination of both cash and shares. Subject to conditions, interim profit distribution may be made by the Company.
- (2) specific circumstances for and proportions of cash dividend of the Company: save in exceptional circumstances, if the Company's profit for the year and its cumulative undistributed profit are positive, the Company may distribute dividend in cash and the profit to be distributed in cash per annum will not be less than 10 percent of the distributable profit realized for that year, or that the total profit to be distributed in cash in the past three years will not be less than 30 percent of the average annual distributable profit realized in the past three years.

The exceptional circumstances refer to the following:

- i. where the auditing firm issues a non-standard unqualified audit report on the financial report of the Company for the year; and
 - ii. where the Company has major investment plan or significant cash expenditure (fund raising projects excepted).
- (3) Conditions for distributing dividends in shares by the Company:

where the Company's business is in a sound condition, and the Board of Directors considers that the stock price of the Company does not reflect its share capital size and distributing dividend in shares will be favorable to all shareholders of the Company as a whole, provided that the above conditions of cash dividend are fully met, the Company may propose dividend distribution in shares;

- (4) Upon occurrence of any illegal appropriation of the Company's funds by the shareholders, the Company shall deduct the cash bonus to be paid to such shareholders to make up for the funds appropriated by such shareholders.

Article 200. Procedures for considering the profit distribution plan of the Company:

- (1) The profit distribution plan of the Company shall be drawn up by the management before being submitted to the Board of Directors and the supervisory committee of the Company for consideration. The Board of Directors shall thoroughly discuss the rationality of the profit distribution plan and form a specific resolution before submitting it to the general meeting for consideration. In considering the profit distribution plan, the Company shall make Internet voting accessible to the shareholders.
- (2) Where the Company does not distribute cash dividend by reason of the exceptional circumstances in Article 199 above, the Board of Directors shall explain the specific reasons for not distributing cash dividends, the exact purpose for the retained profit and the estimated investment return, and upon the independent Directors having expressed their opinions thereon, submit such proposal to the general meeting for consideration, and disclose the same in the media designated by the Company.

Article 201. Implementation of the profit distribution plan of the Company: After the profit distribution plan has been resolved at a general meeting, the Board of Directors shall complete dividend (or share) distribution within two months after the holding of such meeting.

Article 202. Alteration of the Company's profit distribution policy:

In case of force majeure events such as war, natural disasters, or changes to the Company's external operational environment resulting in material impact on its production and operation, or relatively significant changes to the Company's operational position, the Company may adjust its profit distribution policy.

The Board of Directors shall conduct specific discussion over adjustment to the Company's profit distribution policy, provide detailed reasons for such adjustment, form a written report to be considered by independent Directors, and then submit to the general meeting for approval by way of a special resolution. In considering alterations to the profit distribution policy, the Company shall make Internet voting accessible to the shareholders.

- Article 203. Dividends and other payments by the Company to holders of domestic investment shares shall be distributed and paid in Renminbi, whereas those to holders of overseas listed foreign investment shares shall be denominated and declared in Renminbi and paid in HK Dollars. The foreign currency for the cash dividends and other payments by the Company to holders of overseas listed foreign investment shares and other holders of foreign investment shares shall be handled in accordance with state regulations on foreign exchange control.
- Article 204. Unless otherwise provided in relevant laws and Administrative regulations, where cash dividends and other amounts are paid in HK Dollars, the average selling price of the relevant foreign exchange posted by the People's Bank of China for the Gregorian calendar week immediately preceding the date of declaration of the dividends or other payment shall be used as the exchange rate.
- Article 205. Subject to the paragraph 2, Article 61 and the item (18), paragraph 1, Article 112 of these Articles of Association, the Board of Directors may decide to distribute the interim dividend or special dividend.
- Article 206. When distributing dividends to shareholders, the Company shall withhold and turn over the tax payable on the dividend income of shareholders based on the amount distributed and in accordance with PRC tax laws.
- Article 207. The Company shall appoint receiving agents for holders of overseas listed foreign investment shares to collect on behalf of the relevant shareholders the dividends distributed and other moneys payable in respect of overseas listed foreign investment shares.
- The receiving agents appointed by the Company shall meet the requirements of the laws of the place, or the relevant regulations of the stock exchange, where shares are listed.
- The receiving agents appointed by the Company for the holders of overseas listed foreign investment shares listed on the SEHK shall be trust companies registered under the Trustee Ordinance of Hong Kong.
- Under the premise of obeying the laws of China, the Company has the right to forfeit the unclaimed dividends, subject to the expiry of the applicable relevant limitation period.

The Company shall have the right to cease sending dividend warrants to holders of overseas listed foreign investment shares by post, but such right shall only be exercised until the dividend warrants have been left uncashed on two consecutive occasions. However, such power may be exercised after the first occasion on which such a warrant is returned undelivered.

The Company shall have the right to sell the shares of untraceable shareholders of overseas listed foreign investment shares in the manner as the Board of Directors thinks appropriate, subject to compliance with the following conditions:

- (1) during a period of 12 years at least three dividends in respect of the shares in question have become payable and no dividend during that period has been claimed;
- (2) on expiry of the 12 years the Company gives notice of its intention to sell the shares by way of advertisements published in one or more newspapers in the place of listing of the Company and notifies the securities regulatory authority where the Company's shares are listed of such intention.

Article 208. The Company shall implement an internal auditing system and appoint dedicated auditing personnel to carry out internal auditing and supervision of the Company's financial revenues and expenditures, and economic activities.

Article 209. The Company's internal auditing system and the responsibilities of its auditing personnel shall be implemented after the approval thereof by the Board of Directors. The person in charge of auditing shall be accountable and report to the Board of Directors.

CHAPTER 18 Engagement of Accounting Firms

Article 210. The Company shall engage an independent accounting firm that complies with relevant provisions of PRC laws to audit the annual financial reports and review other financial reports of the Company, make verification of net assets and provide other consulting-related services.

The Company's engagement of accounting firm shall be decided by the Shareholders' General Meeting following the approval of the Audit Committee.

- Article 211. The term of engagement of an accounting firm engaged by the Company is one year, which shall commence upon the adjournment of the annual Shareholders' General Meeting of the Company and end upon the adjournment of the next annual Shareholders' General Meeting. The accounting firm could be re-appointed if the term is expired.
- Article 212. An accounting firm engaged by the Company shall have the following rights:
- (1) the right of access to the account books, records or vouchers of the Company and the right to require directors, the Manager and other senior management staff of the Company to provide relevant information and explanations at any time;
 - (2) the right to require the Company to take all reasonable measures to obtain from its subsidiaries the information and explanations necessary for the accounting firm to perform its duties;
 - (3) the right to attend shareholders' meetings in a non-voting capacity, to receive notice of or other information concerning any meetings of or concerning which shareholders have a right to receive notice or other information, and to be heard at any shareholders' meetings on any matter which relates to it as the accounting firm of the Company.
- Article 213. If the position of accounting firm becomes vacant, the Board of Directors may following the approval of the Audit Committee appoint an accounting firm to fill such vacancy before a Shareholders' General Meeting is held. However, if there are other accounting firms holding the position of accounting firm of the Company while such vacancy persists, such accounting firms may continue to act.
- Article 214. The Shareholders' General Meeting may by ordinary resolution decide to dismiss any accounting firm prior to the expiration of its term of engagement, notwithstanding anything in the contract between the accounting firm and the Company, but without prejudice to such accounting firm's right, if any, to claim damages from the Company in respect of such dismissal.

- Article 215. The remuneration or method of determining the remuneration of an accounting firm shall be decided upon by the Shareholders' General Meeting. The remuneration of an accounting firm engaged by the Board of Directors shall be determined by the Board of Directors after being approved by the Audit Committee and shall be reported to the Shareholders' General Meeting for approval.
- Article 216. The engagement, dismissal or non-renewal of engagement of an accounting firm shall be decided upon by the Shareholders' General Meeting. If there are relevant provisions in the applicable laws, administrative regulations and rules and/or the relevant listing rules, the Company shall disclose such provisions of the Shareholders' General Meeting on relevant newspapers or periodicals, and describe the reasons for replacement if necessary, as well as report them to the State Council authorities in charge of securities and Chinese Institute of Certified Public Accountants for record.
- Article 217. Where a resolution at a Shareholders' General Meeting is to be passed to appoint as accounting firm an accounting firm other than an incumbent accounting firm, to fill a casual vacancy in the office of accounting firm, or to reappoint an accounting firm engaged by the Board of Directors to fill the vacancy in the office of accounting firms or to remove an accounting firm before the expiration of its term of office, matters shall be handled in accordance with the following provisions:
- (1) the motion of engagement or dismissal shall be sent, before issuance of the notice of the Shareholders' General Meeting, to the accounting firm proposed to be appointed or the accounting firm proposing to leave its post or the accounting firm that has left its post in the relevant fiscal year; leaving includes leaving by removal, resignation and retirement.
 - (2) if the accounting firm leaving its post makes representations in writing and requests their notification to the shareholders, the Company shall (unless the representations are received too late):
 - i. in any notice of the resolution given to shareholders, state the fact of the representations having been made by the accounting firm that is leaving its post;

- ii. serve a copy of the representations as an attachment to the notice on the shareholders by the method specified in these Articles of Association.
- (3) if the accounting firm's representations are not sent under item (2) of this Article, the relevant accounting firm may, in addition to its right to be heard, require that the representations be read out at the Shareholders' General Meeting.
- (4) an accounting firm that is leaving its post shall be entitled to attend:
- i. the Shareholders' General Meeting at which its term of office would otherwise have expired;
 - ii. any Shareholders' General Meeting at which it is proposed to fill the vacancy caused by its removal;
 - iii. any Shareholders' General Meeting convened on its resignation.

The resigned accounting firm shall make a statement on the matters of his work as a former accountant at the above meeting and receive all notices of, and other information relating to, any such meeting, and to be heard at any such meeting which it attends on matters which concern it as former accounting firm of the Company.

Article 218.

When the Company dismisses or does not renew the engagement of an accounting firm, it shall give notice to the accounting firm 10 days in advance. The accounting firm shall have the right to present its views before the Shareholders' General Meeting. If the accounting firm believes that the Company's grounds for the dismissal or non-renewal of engagement of it are not justified, it shall appeal to the State Council authorities in charge of securities and Chinese Institute of Certified Public Accountants. In case the accounting firm tenders the resignation, it shall describe to the Shareholders' General Meeting whether there is any improper matter.

The accounting firm shall place the resignation notice at the Company's domicile to resign its position. The notice shall be effective on the date placing the notice at the Company's domicile and the date specified in the notice, whichever is later. The notice shall include the following statements:

- (1) believing that the resignation does not involve any statement that shall be described to the Company's shareholders or creditors; or
- (2) any such conditions that shall be described.

Where a notice is deposited under the preceding paragraph, the Company must within 14 days send a copy of the notice to the competent authority. If the notice contained a statement as mentioned in the two items of the preceding paragraph, the Company shall make a copy of such statement available at its offices for inspection by shareholders. The Company shall additionally send a copy of the aforementioned statement to each holder of H Shares by prepaid mail at the recipient's address shown in the register of shareholders. Subject to the laws, regulations and listing rules of the place where Company shares are listed, a copy of the aforementioned statement may alternatively be provided to holders of H Shares by other means as specified in Article 236 of the Articles of Association.

If there is any statement that shall be described in the resignation notice submitted by the accounting firm, the accounting firm may require the Board of Directors to convene an extraordinary Shareholders' General Meeting and listen to its explanations about the resignation.

CHAPTER 19 Merger and Division of the Company

Article 219. The Company may carry out mergers or divisions in accordance with the laws.

Upon The merger or division of the Company, the Company's Board of Directors shall take necessary measures to protect the lawful rights and interests of the shareholders who oppose the proposal for the merger or division of the Company.

Shareholders that oppose the proposal for the merger or division of the Company shall have the right to require the Company or shareholders that are in favor of such proposal to purchase their shares at a fair price.

The contents of resolutions approving the merger or division of the Company shall be compiled in a special document for inspection by shareholders. Holders of overseas listed foreign investment shares shall additionally be served copies of the aforementioned document by mail.

Article 220. A merger involving the Company may take either the form of a merger by absorption or the form of a merger by new establishment.

If the Company is involved in a merger, the parties to the merger shall enter into a merger agreement. The parties to the merger shall prepare a balance sheet and a property list. Within 10 days from the date of adoption of the merger resolution, the Company shall notify its creditors and within 30 days it shall make an announcement in the newspapers. A creditor may, within 30 days from the date of receipt of the written notice or, if he did not receive a written notice, within 45 days from the date of the announcement, require the Company to pay its debt to him in full or to provide commensurate security.

When the Company is merged, the claims and debts of each party to the merger shall be succeeded to by the Company surviving the merger or the new company established subsequent to the merger.

Article 221. If the Company is divided, its property shall be divided accordingly.

When the Company is divided, a division agreement shall be signed by all parties involved in the division and it shall prepare a balance sheet and a property list. Within 10 days from the date of adoption of the resolution on the division, the Company shall notify its creditors and within 30 days it shall make an announcement in the newspapers.

The post-division companies shall be jointly and severally liable for the pre-division debts of the Company, unless provided otherwise in a written agreement on debt repayment reached between the Company and a creditor prior to the division.

Article 222. If a change occurs in the Company's registered particulars due to its merger or division, the change shall be registered with the Company's registrar in accordance with the laws. If the Company is dissolved, de-registration of the Company shall be carried out in accordance with the law. If a new company is established, registration of the establishment of such company shall be carried out in accordance with the laws.

CHAPTER 20 Dissolution and Liquidation of the Company

Article 223. The Company shall be dissolved and liquidated in accordance with the laws if:

- (1) the Shareholders' General Meeting resolves to dissolve the Company;
- (2) dissolution is necessary as a result of the merger or dissolution of the Company;
- (3) the Company is legally declared bankrupt because it is unable to pay its debts as they fall due;
- (4) the Company has its business license revoked, is ordered to close down or is shut down in accordance with the law for breaching laws and administrative regulations;
- (5) serious difficulties arise in the operation and management of the Company and its continued existence would cause material loss to the interests of the shareholders and such difficulties cannot be resolved through other means, in which case shareholders holding at least 10 percent of all shareholders' voting rights may petition a People's Court to dissolve the Company.

Article 224. If the Company is dissolved pursuant to item (1), (3), (4) or (5) of the preceding Article, it shall establish a liquidation committee and liquidation shall commence within 15 days from the date on which the cause for dissolution arose. The liquidation committee shall be composed of persons determined by the Board of Directors or the Shareholders' General Meeting by ordinary resolution. If the Company fails to establish the liquidation committee and carry out the liquidation within the time limit, its creditors may petition a People's Court to designate relevant persons to form a liquidation committee and carry out the liquidation.

Article 225. If the Board of Directors decides that the Company should be liquidated (otherwise than because of a declaration of bankruptcy), the notice of the Shareholders' General Meeting convened for such purpose shall include a statement to the effect that the Board of Directors has made full inquiry into the position of the Company and that the Board is of the opinion that the Company can pay its debts in full within 12 months after the commencement of liquidation.

The functions and powers of the Board of Directors shall terminate immediately upon the adoption by the Shareholders' General Meeting of a resolution to carry out liquidation.

The liquidation committee shall take instructions from the Shareholders' General Meeting, and not less than once a year make a report to the Shareholders' General Meeting on the committee's receipts and expenditures, the business of the Company and the progress of the liquidation. It shall make a final report to the Shareholders' General Meeting when the liquidation is completed.

Article 226. The liquidation committee shall notify creditors within a period of 10 days from the date of its establishment and make announcements of the liquidation in the newspapers within 60 days. Claims shall be registered by the liquidation committee. During the claim declaration period, the liquidation committee may not pay any debts to creditors.

Article 227. The liquidation committee shall exercise the following functions and powers during liquidation:

- (1) to inventory the Company's property, and to prepare a balance sheet and property list;
- (2) to notify creditors by notice and public announcement;
- (3) to dispose of unfinished business of the Company relating to the liquidation;
- (4) to make full payment of taxes owed and of taxes incurred during the liquidation process;
- (5) to liquidate claims and debts;

(6) to dispose of the Company's property remaining after the debts are paid in full;

(7) to represent the Company in civil actions.

Article 228.

After the liquidation committee has inventoried the Company's property and prepared a balance sheet and property list, it shall formulate a liquidation plan and submit such plan to the Shareholders' General Meeting or the competent authority for confirmation.

After payment of the liquidation expenses, the Company's property remaining shall pay in the following order: (i) the wages of the employees; (ii) social insurance premiums and statutory compensation; (iii) the taxes owed; (iv) bank loans, Company bonds and other Company debts.

The remaining assets after the disposal of the Company's property in accordance with the preceding provision, the shareholders shall distribute them according to the type and proportion of shares held by them:

(1) in case of preferred shares, they shall be distributed to the shareholders of the preferred shares according to the par value of the preferred shares; in case the shares fail to repay for the preference shares, they shall be distributed according to the proportion of shares held by the shareholders of the preference shares;

(2) be distributed by the Company to the shareholders in proportion to the shares they hold. During liquidation, the Company shall not engage in any business activities unrelated to the liquidation.

Article 229.

If the Company is liquidated due to dissolution and the liquidation committee, having inventoried the Company's property and prepared a balance sheet and property list, discovers that the Company's property is insufficient to pay its debts in full, it shall apply to the Peoples Court for a declaration of bankruptcy.

After the People's Court has ruled to declare the Company bankrupt, the liquidation committee shall turn over the liquidation matters to the People's Court.

Article 230. Following completion of the liquidation of the Company, the liquidation committee shall prepare a liquidation report, as well as revenue and expenditure statement and financial account books in respect of the liquidation period, and, after verification thereof by a PRC certified public accountant, submit the same to the Shareholders' General Meeting or the competent authority for confirmation.

Within 30 days from the date of confirmation of the aforementioned documents by the Shareholders' General Meeting or the competent authority, the liquidation committee shall submit the same to the company registrar, apply for cancellation of the Company's registration and publicly announce the Company's termination.

CHAPTER 21 Procedures for Amending the Company's Articles of Association

Article 231. The Company may amend its Articles of Association in accordance with laws, administrative regulations and its Articles of Association.

Article 232. The Company's Articles of Association shall be amended in the following manner:

- (1) the Board of Directors shall pass a resolution to draw up a proposal on amendment of the Company's Articles of Association or the shareholders shall propose to amend the Company's Articles of Association;
- (2) the foregoing proposal shall be furnished to the shareholders in writing and a Shareholders' General Meeting shall be convened to examine the contents of the proposal;
- (3) the contents of the amendments submitted to the Shareholders' General Meeting for resolution shall be approved by a special resolution.

Article 233. The Company shall amend the Articles of Association if:

- (1) provisions of the Articles of Association conflict with the Company Law or administrative regulations after such laws are amended;
- (2) a change occurs in the Company's situation and such change is inconsistent with the matters stated herein;
- (3) the Shareholders' General Meeting decides to amend the Articles of Association.

Article 234. If an amendment to these Articles of Association involves matters provided for in the Mandatory Provisions of Articles of Association of Companies That List Overseas, it shall become effective upon approval by the authority that is authorized by the State Council to examine and approve companies.

Article 235. If an amendment to these Articles of Association involves a registered particular of the Company, registration of the change shall be carried out in accordance with the laws.

If an amendment to the Articles of Association involves a matter which is required by the laws, the administrative rules and regulations to be disclosed, an announcement shall be made in accordance with regulations.

CHAPTER 22 Notices and Announcements

Article 236. Notices (for the purposes of this Chapter, the term "notice" includes the notice of the meetings issued by the Company to its shareholders, Company communications and other written materials) of the Company shall be given or provided by one or more of the following means: (1) by hand; (2) by mail; (3) by way of a public announcement; (4) other means recognized by the securities regulator of the place where Company shares are listed and by the stock exchange or specified in these Articles of Association.

As for the Company's notice sent by way of a public announcement; such announcements must be published in the designated newspapers (if any) and/or other designated media (including websites) of the securities regulatory bodies and the stock exchange where the Company's shares are listed.

As for the Company's methods to send or provide notice to the shareholders of H shares in accordance with the Hong Kong Listing Rules, subject to other documents specified in the laws, regulations and listing rules of the place where Company shares are listed, the Company may issue or give corporate communications to holders of H shares by electronic means or publication of information on a website.

The term "**corporate communication**" means any document issued or to be issued by the Company for the information or action of holders of any Company securities. Such communications include but are not limited to:

- (1) annual reports, including reports of the Board of Directors, the Company's annual accounts together with the auditor's reports and (where applicable) summary financial reports;
- (2) interim reports and (where applicable) summary interim reports;
- (3) notices of meetings;
- (4) listing documents;
- (5) circulars; and
- (6) proxy forms.

Article 237. For a Company notice given by hand, the person on whom it is served shall sign (of affix his or her seal to) the acknowledgement slip, and the date on which he or she signed in receipt shall be the date of service;

For a Company notice given by way of a public announcement, the first day of publication shall be the date of service.

When the notice is served by post, the notice shall be deemed as served 48 hours after the clearly stating the address, prepaying the postage, placing the notice in the envelope and inserting the envelope containing the notice in the mailbox.

Article 238. A meeting and the resolutions adopted thereat shall not be invalidated due to the accidental omission to give notice of the meeting to, or the non-receipt of notice of the meeting by, a person entitled to receive notice.

CHAPTER 23 Dispute Resolution

Article 239. The Company shall comply with the following rules for dispute resolution:

- (1) If any dispute or claim that concerns Company affairs and is based on rights or obligations provided for in these Articles of Association, the Company Law or other relevant laws arises between a holder of overseas listed foreign investment shares and the Company, between a holder of overseas listed foreign investment shares and a director, a supervisor, the Manager or other senior management staff of the Company or between a holder of overseas listed foreign investment shares and a holder of domestic investment shares, the parties concerned shall submit the dispute or claim to arbitration.

When a dispute or claim as described above is submitted to arbitration, the dispute or claim shall be submitted in its entirety, and all persons (being the Company or shareholders, directors, supervisors, the Manager or other senior management staff of the Company) that have a cause of action due to the same facts or whose participation is necessary for the resolution of such dispute or claim shall submit to arbitration. Disputes regarding the definition of shareholders and the register of shareholders may be resolved by means other than arbitration.

- (2) A dispute or claim submitted to arbitration may be arbitrated, at the option of the arbitration applicant, by either the China International Economic and Trade Arbitration Commission in accordance with its arbitration rules or the Hong Kong International Arbitration Centre in accordance with its securities arbitration rules. After the arbitration applicant has submitted the dispute or claim to arbitration, the other party must submit to the arbitration institution selected by the applicant.

If the arbitration applicant opts for arbitration by the Hong Kong International Arbitration Centre, either party may request arbitration to be conducted in Shenzhen in accordance with the securities arbitration rules of the Hong Kong International Arbitration Centre.

- (3) Unless otherwise provided by laws or administrative regulations, PRC laws shall apply to the resolution by arbitration of disputes or claims referred to in item (1).

(4) The award of the arbitration institution shall be final and binding upon each party.

CHAPTER 24 Supplementary Provisions

Article 240. The Company's Articles of Association are written in Chinese and English. If there is any discrepancy between the two versions, the Chinese version of the Articles of Association shall prevail.

Article 241. The power to interpret these Articles of Association shall vest in the Board of Directors of the Company. The power to amend these Articles of Association shall vest in the Shareholders' General Meeting.

Article 242. For the purposes of these Articles of Association, the term "**accounting firm**" shall have the same meaning as the term "**auditor**".

The "**Manager**", "**Senior Deputy Manager**" and "**Deputy Manager**" in these Articles of Association refer to the Company's "**President**", "**Senior Deputy President**" and "**Deputy President**".

The "Other Senior Management Staff" in these Articles of Association includes but not limited to "Senior Deputy President", "Deputy President", the "Chief Financial Officer" and the "Secretary to the Board" and so forth.

The "**Executive Director**" in these Articles of Association refers to the director working in the Company.

The "**Actual Controller**" in these Articles of Association refers to the person who has actually control over the actions of the Company via investment, agreement or other arrangement although he or she might not be the shareholder of the Company.

The "**Close Associate**" in these Articles of Association shall have the same meaning as defined in Rule 19A.04 of the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited.

The "**Secretary to the Board**" in these Articles of Association shall have the same meaning as the "Company Secretary" under the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited.

**Description of rights of each class of securities
registered under Section 12 of the Securities Exchange Act of 1934 (the “Exchange Act”)**

American depositary shares (“ADSs”), each representing 25 H Shares of Aluminum Corporation of China Limited (the “Company”, “we” or “our”), are listed and traded on the New York Stock Exchange, and, in connection with such listing (but not for trading), the H Shares, listed and traded on the Hong Kong Stock Exchange, are registered under Section 12(b) of the Exchange Act. This exhibit contains a description of the rights of (i) the holders of H Shares and (ii) ADSs holders. H Shares underlying the ADSs represented by the American Depositary Receipts (“ADRs”) are held by The Bank of New York Mellon, as depositary, and ADR holders will not be treated as holders of the H Shares.

Capital terms used but not defined herein shall have the meanings given to them in our annual report on Form 20-F for the year ended December 31, 2019, to which this description of securities is an exhibit and which is referred to as “this annual report” herein.

H Shares

The following is a summary of the general terms and provisions of our H Shares and does not purport to be complete and is subject to and qualified in its entirety by reference to our Articles of Association, as amended, and to the applicable laws and regulations. A copy of our Articles of Association is filed as Exhibit 1.1 to this annual report.

Preemptive Rights (Item 9.A.3 of Form 20-F)

Not applicable.

Type and Class of Securities and Transferability of H Shares (Item 9.A.5 of Form 20-F)

Type and Class of Securities

Each H Share has RMB1.00 par value. Certificates of H Shares are issued in registered form. Both domestic shares and H Shares are ordinary shares. The numbers of our domestic shares and H Shares that were issued and outstanding as of December 31, 2019 are provided on the cover of this annual report.

Transferability of H Shares

H Shares for which the share capital has been paid in full may be transferred freely in accordance with the Articles of Association, but unless otherwise approved or filings being completed according to PRC law, H Shares may generally be traded directly only among investors who are legal or natural persons resident outside of the PRC and may not be sold directly to investors resident within the PRC. There are no restrictions under PRC law or our Articles of Association on the ability of investors who are not PRC residents to hold H Shares.

According to our Articles of Association, the Board may refuse to recognize any instrument of transfer without giving any reason unless such transfer is carried out in compliance with the following conditions:

- (1) payment of HK\$2.50 per instrument of transfer or higher charge as agreed at such time by the Hong Kong Stock Exchange has been made to the Company for the purpose of registering the instrument of transfer and other documents relating to or which may affect the title to the shares;
- (2) the instrument of transfer only involves H Shares;
- (3) the stamp duty payable on the instrument of transfer as required by Hong Kong law has been paid;

(4) relevant share certificates and evidence that the transferor has the right to transfer such shares as reasonably required by the Board have been provided;

(5) if the shares are to be transferred to joint holders, the number of registered joint holders may not exceed four; and

(6) the relevant shares are not encumbered by any Company lien.

See also “Limitations on the rights to own securities” under “Item 10. Additional Information – B. Memorandum and Articles of Association” of this annual report.

Limitations or Qualifications (Item 9.A.6 of Form 20-F)

Holders of domestic shares and H Shares are deemed to be shareholders of different classes for some matters. See “Voting Rights” and “Actions necessary to change the rights of holders of our shares or holders of a class of shares” under “Item 10. Additional Information – B. Memorandum and Articles of Association” of this annual report.

Other Rights (Item 9.A.7 of Form 20-F)

Not applicable.

Rights of the Shares (Item 10.B.3 of Form 20-F)

See “Dividend Policy” under “Item 8. Financial Information”, and “Dividend rights”, “Voting rights”, “Directors’ qualifying shares”, “Rights to share profits”, “Rights to share surplus in the event of liquidation”, “Redemption provisions; sinking fund provisions and liability to further capital calls”, and “Provisions discriminating against any existing or prospective shareholder as a result of owning a substantial number of shares” under “Item 10. Additional Information – B. Memorandum and Articles of Association” of this annual report.

Requirements for Amendments (Item 10.B.4 of Form 20-F)

See “Actions necessary to change the rights of holders of our shares or holders of a class of shares” under “Item 10. Additional Information – B. Memorandum and Articles of Association” of this annual report.

Conditions Governing the Manner in which Annual General Meetings and Extraordinary General Meetings of Shareholders are Convoked (Item 10.B.5 of Form 20-F)

See “Conditions governing the manner in which annual general meetings and extraordinary general meetings of shareholders are convoked” under “Item 10. Additional Information – B. Memorandum and Articles of Association” of this annual report.

Limitations on the Rights to Own Shares (Item 10.B.6 of Form 20-F)

See “Limitations on the rights to own securities” under “Item 10. Additional Information – B. Memorandum and Articles of Association” of this annual report.

Provisions Affecting Any Change of Control (Item 10.B.7 of Form 20-F)

See “Provisions having an effect of delaying, deferring or preventing a change in control” under “Item 10. Additional Information – B. Memorandum and Articles of Association” of this annual report.

Ownership Threshold (Item 10.B.8 of Form 20-F)

See “Provisions having an effect of delaying, deferring or preventing a change in control” under “Item 10. Additional Information – B. Memorandum and Articles of Association” of this annual report.

Differences Between the Law of Different Jurisdictions (Item 10.B.9 of Form 20-F)

General

We are a PRC joint stock company, which is a corporate entity organized under the Company Law of the PRC. Under the PRC company law, the registered capital of a joint stock company is divided into shares of equal par value. The PRC company law differs from laws applicable to United States corporations and their shareholders. Set forth below is a summary of certain significant differences between the provisions of the PRC company law applicable to us and the comparable provisions of the laws applicable to companies incorporated in the United States and their shareholders (for this purpose we refer to Delaware corporate law). Such summary does not purport to be complete and is subject to and qualified in its entirety by reference to our Articles of Association, as amended, and to the relevant laws and regulations.

Shareholders' approval by written consent

PRC law does not provide shareholders of joint stock companies with rights to approve corporate matters by written consent.

Under Delaware law, unless otherwise provided in the certificate of incorporation, any action which is required or permitted to be taken at any shareholders' meeting may be taken without a meeting, subject to various conditions.

Amendments of articles of association

Under PRC law, an amendment of the articles of association must be approved by an affirmative vote of two-thirds of shareholders attending a shareholders' meeting. Amendments with respect to the Mandatory Provisions for Companies Listing Overseas (the "**Mandatory Provisions**") only become effective after approval by the relevant governmental department authorized by the PRC State Council and the CSRC.

Under Delaware law, with certain exceptions, shareholder approvals must be obtained for any amendment to the certificate of incorporation. Board approvals are also required for any amendment to the certificate of incorporation, but no governmental approval is generally required.

Powers and responsibilities of directors

Under PRC law, the board of directors is responsible for specified actions, including the following functions and powers of a joint stock company:

- convening shareholders' meetings and reporting its work to shareholders at these meetings;
- implementing shareholders' resolutions;
- determining the company's business plans and investment proposals;
- formulating the company's annual financial budgets and final accounts;
- formulating the company's profit distribution plans and loss recovery plans;
- formulating proposals for the increase or decrease in the company's registered capital and the issue of debentures;
- formulating plans for the merger, division, dissolution or change of the form of the company;
- deciding on the company's internal management structure and formulating its basic management system;

- appointing or removing the company's general manager and deciding on the remuneration of the general manager; appointing and removing deputy general manager and company personnel in charge of financial matters based on the recommendation of the general manager and deciding on the remuneration of the deputy general manager and company personnel in charge of financial matters; and
- exercising other power conferred by the article of associations of the company.

In addition, the Mandatory Provisions provide that the board of directors has the authority to formulate any proposal to amend the articles of association and to exercise any other power conferred by a decision of the shareholders' meeting and that the issuance of bonds must be approved by the shareholders in a general meeting by way of a special resolution.

Under Delaware law, the business and affairs of a Delaware corporation are managed by or under the direction of its board of directors. Their powers include fixing the remuneration of directors and borrowing power, except as otherwise provided by statute or in the certificate of incorporation or bylaws of the corporation.

Powers and responsibilities of supervisors

Under PRC law, a PRC joint stock company must have a board of supervisors consisting of shareholder representatives and one or more employee representatives. Supervisors attend board meetings as non-voting observers. Directors, officers and company personnel in charge of financial matters may not serve as supervisors. The supervisors perform and exercise the following functions and powers:

- examining the company's financial affairs;
- monitoring compliance with laws, regulations, the articles of association of the company and the shareholders resolutions by the directors and members of senior management of the company; and suggesting removing the directors and members of senior management who violate these laws, regulations, the articles of association of the company and the shareholders resolutions;
- requiring corrective action from directors and members of senior management whose actions are contrary to the interests of the company;
- proposing the holding of extraordinary shareholders' meetings and convening and presiding over shareholders' meetings where the board of directors does not exercise its duties as prescribed in the law;
- proposing new items to be inserted in the agenda of the shareholders' meeting;
- bringing lawsuits against directors or members of senior management, if they violate laws, regulations or the articles of association of the company; and
- exercising and performing other powers and functions provided for in the company's articles of association.

In addition, the Mandatory Provisions provide that supervisors of overseas listed joint stock companies are entitled to examine the financial information, including financial statements, operation reports and plans for profit distribution, to be submitted by the board of directors to the shareholders' meetings; and authorize, in the company's name, public certified accountants or licensed auditors to assist in the re-examination of such information, should any doubt arise in respect thereof. The fees and expenses of attorneys and other professionals incurred by the supervisors in connection with the discharge of their duties are to be paid by the company.

Delaware law makes no provision for a comparable corporate institution.

Duties of directors and supervisors

Under PRC law, directors and supervisors of a joint stock company are required to comply with relevant laws and regulations and the company's articles of association. A director or supervisor who contravenes any law, regulation or the company's articles of association in the performance of his duties shall be personally liable to the company for any loss incurred by the company. Directors or supervisors are required to carry out their duties honestly and diligently, and protect the interests of the company. They are also under a duty of confidentiality to the company and prohibited from divulging confidential information concerning the company, except as permitted by relevant laws and regulations or by a decision of a shareholders' meeting. Without the approval of shareholders' meetings, they may not use their position and authority in the company to seek personal gain or directly or indirectly engage in the same business as the company or in any other business detrimental to the interests of the company; otherwise, they are required to forfeit any profits from these activities to the company.

Under Delaware law, the business and affairs of a corporation are managed by or under the direction of its board of directors. In exercising their powers, directors need to satisfy their fiduciary duty to the corporation and its shareholders, including the duty of care and the duty of loyalty.

Limitations on transactions with interested directors and supervisors

Under PRC law, directors and supervisors of a joint stock company may not enter into any contracts or transactions with the company unless permitted by the articles of association or approved by the shareholders with full knowledge. A company may not provide any guarantees to shareholders or any de facto control person of the company unless such guarantees are approved by a majority of shareholders present at the shareholders' meeting, excluding the shareholder who will be provided such guarantees. Under the Mandatory Provisions, a director or supervisor is required to disclose to the board of directors any transaction with the company in which he has a direct or indirect interest or in which there is a material conflict of interest between the company and himself. A director is not entitled to vote or be counted for quorum purposes in any board decision on any such transaction. A company may set aside any interested transaction which did not comply with these requirements, unless the other party to such transaction was honestly unaware of the breach of obligations by the interested director or supervisor. A company may not loan or provide any guarantees to directors or supervisors (including persons related to them), except for the loans made in accordance with employment contracts approved by the shareholders' meeting regarding expenses incurred for the company or performing the duties of such director or supervisor, or unless the company's business scope allows for the provision of loans and guarantees and such loans or guarantees are made under regular commercial terms.

Under Delaware law, an interested transaction is not voidable solely for the reason that the transaction is interested if (1) the material facts as to the interested director's relationship or interests are disclosed or are known to the board of directors and the board of directors in good faith authorizes the transaction by the affirmative vote of a majority of the disinterested directors, (2) such material facts are disclosed or are known to the shareholders entitled to vote on such transaction and the transaction is specifically approved in good faith by vote of shareholders or (3) the transaction is fair as to the corporation as of the time it is authorized, approved or ratified. Under Delaware law, the interested director could be held liable for a transaction in which such director derived any improper personal benefit.

Election and removal of directors

Under PRC law, the term of office of directors of a joint stock company must be specified in the articles of association, but may not exceed three years. Directors may be re-elected. Directors can be removed by a valid resolution of a shareholders' meeting duly convened. PRC law does not contemplate a classified board of directors.

Under Delaware law, directors of a Delaware corporation can be removed from office with or without cause by the holders of a majority of shares then entitled to vote at an election of directors, provided that, except where the certificate of incorporation of the Delaware corporation otherwise provides, a member of a classified board may be removed by shareholders only for cause, and in a corporation with cumulative voting, if less than all of the directors are removed, no director may be removed without cause if the votes cast against the director's removal are sufficient to elect the director if cumulatively voted at an election of directors. The Court of Chancery may remove a director who has been convicted of a felony or found by a court to have committed a breach of the duty of loyalty in connection with his or her duties to the corporation following application by the corporation or derivatively in the right of the corporation by any shareholder. The court may order the removal only if it determines that the director did not act in good faith in performing the acts resulting in the prior conviction or judgment and that removal is necessary to avoid irreparable harm to the corporation.

Dividend payments

Under PRC law, proposals for distribution of profits are formulated by the board of directors and submitted for shareholder approval at a shareholders' meeting. Dividends may be distributed in the form of cash or shares.

Under Delaware law, the board of directors of a Delaware corporation may declare dividends out of distributable earnings and profits without the approval of the shareholders.

Limitations on the rights to own securities

Under PRC law, foreign-invested shares such as our H Shares and ADSs generally can be held only by foreign shareholders and other shareholders from the regions of Hong Kong, Macao and Taiwan. However, since November 2014, mainland investors can trade H Shares through the Stock Connect scheme.

Under Delaware law, there are no limitations on the rights to own securities based on nationality or residency.

Amalgamations and business combinations; appraisal rights

Under PRC law, amalgamations and divisions involving joint stock companies are required to be approved by shareholders voting at a shareholders' meeting. The Mandatory Provisions require an amalgamation or division involving the company to be approved by an affirmative vote of two-thirds of the votes present at the shareholders' meeting called to consider the transaction. Any opposing shareholder may request the company or the consenting shareholders to purchase its shares at a fair price.

Under Delaware law, with certain exceptions, a merger, consolidation or sale of all or substantially all the assets of a corporation must be approved by the board of directors and holders of a majority of the outstanding shares entitled to vote. A shareholder objecting to the merger is entitled to appraisal rights pursuant to which the shareholder may receive cash in the amount of the fair value of the shares held by such shareholder (as determined by a court) in lieu of the consideration the shareholder would otherwise receive in the transaction.

Transactions with significant shareholders

Under Delaware law, a business combination between a Delaware public corporation and an interested shareholder which takes place at any time during a period of three years commencing with the date the interested shareholder became an interested shareholder would need prior approval from the board of directors or a supermajority of the other shareholders of the corporation, unless the corporation opted out of the relevant Delaware business combination statute. Under Delaware law, an interested shareholder of a corporation is someone who, together with its affiliates and associates, owns more than 15% of the outstanding common shares of the corporation. No such business combination statute or regulation applies to PRC joint stock companies.

Shareholders' lawsuits

Under PRC law, the articles of associations of PRC companies listed in Hong Kong shall provide that most disputes involving a holder of H shares are to be resolved by final and binding arbitration.

Class actions and derivative actions generally are available to shareholders under Delaware law for, among other things, breach of fiduciary duty and corporate waste.

Limitations on liability and indemnification of directors and officers

PRC law does not provide for any specific limitations on liability or indemnification of directors or officers.

Under Delaware law, a corporation may indemnify a current director or officer of the corporation against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred in defense of an action, suit or proceeding by reason of such position if (1) the director or officer acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation and (2) with respect to any criminal action or proceeding, the director or officer had no reasonable cause to believe that his conduct was unlawful. A corporation may not retroactively impair or eliminate indemnification or advancement rights by amending the corporation's certificate of incorporation or bylaws after the occurrence of the act or omission that gives rise to indemnification or advancement rights, unless the provision contains, at the time of the act or omission, an explicit authorization of such elimination or limitation.

Shareholders' rights of inspection of corporate records

Under PRC law, shareholders are entitled to inspect the articles of association, register of shareholders, corporate bond counter foils, minutes of shareholders' meetings and board meetings and reports of the financial accounts of the company. In addition, the Mandatory Provisions provide that, after paying reasonable fees, shareholders are entitled to inspect the company's shareholder list, certain personal information on the directors, supervisors and officers, the company's capital position and certain information regarding share repurchases conducted by the company during the most recent fiscal year.

Delaware law permits any shareholder of a Delaware corporation to examine or obtain copies of or extracts from the corporation's shareholder list and its other books and records for any purpose reasonably related to such person's interest as a shareholder.

Changes in Capital (Item 10.B.10 of Form 20-F)

See "Conditions governing changes in registered capital" under "Item 10—Additional Information—B. Memorandum and Articles of Association" of this annual report.

American Depositary Shares (Items 12.D.1 and 12.D.2 of Form 20-F)

The Bank of New York Mellon (previously known as The Bank of New York), as depositary (the "**Depositary**"), executes and delivers the ADSs. Each ADS represents ownership interests in 25 H Shares (or the right to receive 25 H Shares) deposited with the Hong Kong office of The Hongkong and Shanghai Banking Corporation Limited, as custodian (the "**Custodian**"). Each ADS will also represent securities, cash or other property deposited with the Depositary and not distributed to ADR holders. The Depositary's principle executive office is located at 240 Greenwich Street, New York, NY 10286, which is also the current corporate trust office of the Depositary. The Custodian's office is located at 17/F, Tower 3, HSBC Centre, 1 Sham Mong Road, Kowloon, Hong Kong, China.

The ADSs will be evidenced by ADRs delivered by the Depositary. An ADR may evidence any number of ADSs. You may hold ADRs either directly or indirectly through your broker or other financial institution. If you hold ADRs directly, you are an ADR holder. This description assumes that you hold your ADRs directly. If you hold the ADRs indirectly, you must rely on the procedures of your broker or other financial institution to assert the rights of ADR holders described in this Section. You should consult with your broker or financial institution to find out what those procedures are.

Because the Depositary will actually hold the H Shares underlying the ADSs represented by the ADRs, you must rely on it to exercise the rights of a shareholder. The obligations of the Depositary are set out in a deposit agreement among us, the Depositary and you, as an ADR holder. The deposit agreement, the ADSs and the ADRs are generally governed by New York law.

The following is a summary of the deposit agreement. Because it is a summary, it does not contain all the information that may be important to you. For more complete information, you should read the entire deposit agreement and the form of ADR. The deposit agreement has been filed with the SEC as an exhibit to a Registration Statement on Form F-6 (File No. 333-144380) for the Company, which was filed on July 6, 2007. A specimen of the ADR was also filed as Exhibit 2.1 to our annual report on Form 20F/A (File No. 001-15264), which was filed with the SEC on October 9, 2012.

Share Dividends And Other Distributions

The Depositary has agreed to pay to you the cash dividends or other distributions it or the Custodian receives on H Shares or other deposited securities, after deducting its fees and expenses. You will receive these distributions in proportion to the number of H Shares your ADSs represent.

Cash

The Depositary will convert any cash dividend or other cash distribution we pay on the H Shares into U.S. dollars, if it can do so on a reasonable basis and can transfer the U.S. dollars to the United States. If that is not possible as a result of the existence of foreign exchange controls prohibiting such conversion, or if any approval from the government is needed and cannot be reasonably obtained, the agreement allows the Depositary to distribute the Renminbi only to those ADR holders to whom it is possible to do so. It will hold the Renminbi it cannot convert for the account of the ADR holders who have not been paid. It will not invest the Renminbi, and it will not be liable for the interest.

Before making a distribution, any withholding taxes that must be paid will be deducted. See “Item 10. Additional Information—E. Taxation” of this 20-F. The Depositary will distribute only whole U.S. dollars and cents and will round fractional cents to the nearest whole cent. If the exchange rates fluctuate during a time when the Depositary cannot convert the Renminbi, you may lose some or all of the value of the distribution.

Shares

The Depositary may, after consultation with us and to the extent practicable, and will if we so request, distribute additional ADSs representing any H Shares that we distribute as a dividend or free distribution, if we furnish it with satisfactory evidence that it is legal to do so. The Depositary will only distribute whole ADSs. It will sell H Shares which would require it to issue a fractional ADS and distribute the net proceeds in the same way as it would do with a cash distribution. If the Depositary does not distribute additional ADSs in such circumstances, then each outstanding ADS will also represent the new H Shares (and thereafter the ratio of H Shares per ADS will be adjusted accordingly).

Rights to Purchase Additional H Shares

If we offer holders of our H Shares any rights to subscribe for additional H Shares or any other rights, the Depositary may, after consultation with us, or will if we so request, make these rights available to you, if we furnish it with satisfactory evidence that both the rights and the securities to which such rights relate are exempt from registration with respect to a distribution or are covered by an effective registration statement if registration is required, and the Depositary determines in its discretion that it is lawful and feasible to make such distribution. If the Depositary determines in its reasonable discretion that it is not lawful or feasible to distribute such rights to ADR holders, it may sell the rights and distribute the proceeds in the same way as it would do with a cash distribution. The Depositary may allow rights that are not distributed or sold to lapse. In that case, you will receive no value for them. If the Depositary makes rights available to you, upon instruction from you, it will exercise the rights and purchase the H Shares on your behalf. The Depositary will then deposit the H Shares and deliver additional ADSs to you. It will only exercise rights if you pay it the exercise price and any other charges and fees that the rights and the deposit agreement require you to pay.

U.S. securities laws may restrict the sale, deposit, cancellation, and transfer of the ADSs issued after exercise of rights. For example, you may not be able to trade those ADSs freely in the United States. In this case, the Depositary may issue the ADRs with legend or under a separate restricted deposit agreement which will contain the same provisions as the deposit agreement, except for changes needed to put the restrictions in place.

Other Distributions.

The Depositary will, after consultation with the Company, send to the extent practicable to you anything else that we distribute on deposited securities in any manner that the Depositary reasonably deems equitable and practicable. If in its opinion the distribution cannot be made proportionately among the holders entitled thereto, or if it deems such distribution not to be feasible, the Depositary may adopt such method as it may reasonably deem equitable and practicable for the purpose of effecting such distribution, including to sell what we distributed and distribute the net proceeds, in the same way as it would do with a cash distribution. Or the Depositary may decide to hold what we distributed, in which case the outstanding ADSs will also represent the newly distributed property.

The Depositary is not responsible if it decides that it is unlawful or impractical to make a distribution available to any ADR holders. We have no obligation to register additional ADSs, ADRs, shares, rights or other securities under the Securities Act. We also have no obligation to take any other action to permit the distribution of additional ADSs, ADRs, shares, rights or anything else to ADR holders. This means that you may not receive the distributions that we make on our shares or any value for them if it is illegal or impractical for us to make them available to you.

Deposit, Withdrawal and Cancellation

How does the Depositary deliver ADSs?

The Depositary will deliver ADSs if you or your broker deposit H Shares or evidence of rights to receive H Shares with the Custodian. Upon payment of its fees and expenses and of any taxes or governmental charges, such as stamp taxes or stock transfer taxes or fees, the Depositary will register the appropriate number of ADSs in the names that you request and will deliver the ADRs representing such ADSs at its corporate trust office to the persons you request. The Depositary will not, however, knowingly accept shares for deposit that cannot be traded freely in the United States in accordance with U.S. securities laws or if we instruct the Depositary that the deposit of such H Shares would violate any provision of the Articles of Association of the Company or U.S. securities laws.

How do ADR holders cancel an ADR and obtain H Shares?

You may turn in your ADRs at the Depositary's corporate trust office. Upon payment of its fees and expenses and of any taxes or governmental charges, such as stamp taxes or stock transfer taxes or fees, the Depositary will deliver (1) the H Shares underlying the ADSs represented by the ADRs and (2) any other deposited securities underlying the ADSs represented by the ADRs, to you or person(s) you designate at the office of the Custodian. Or, at your request, risk and expense, the Depositary will deliver the deposited securities at its corporate trust office. ADRs surrendered shall be canceled, and the Depositary is authorized to destroy the ADRs so canceled.

Voting Rights

You may instruct the Depositary to vote the H Shares underlying your ADSs represented by the ADRs but only if we ask the Depositary to ask for your instructions. Otherwise, you will not be able to exercise your right to vote unless you withdraw the H Shares. However, you may not know about the meeting far enough in advance to withdraw the H Shares.

If we ask for your instructions, the Depositary will notify you of any upcoming vote and arrange to deliver our voting materials to you. The materials will (1) describe the matters to be voted on; (2) include a statement that the ADR holders as of the close of business on a specified record date will be entitled to instruct the Depositary to exercise the voting rights, subject to PRC law and the provisions of our Articles of Association; and (3) explain how you, by a certain date, may instruct the Depositary to vote the H Shares or other deposited securities underlying your ADSs as you direct. For instructions to be valid, they must be received by the Depositary on or before the date established by the Depositary. The Depositary will endeavor, as far as practical, subject to PRC law and the provisions of our Articles of Association, to vote or to have its agents vote the H Shares or other deposited securities as you instruct. The Depositary will only vote or attempt to vote as you instruct. However, if the Depositary does not receive your voting instructions, it will deem you to have instructed it to give a proxy to vote your shares to a representative designated by us, provided that no such proxy shall be given with respect to any matter as to which the Company informs the Depositary that (x) the Company does not wish such proxy given, (y) substantial opposition exists or (z) such matter materially and adversely affects the rights of holders of H Shares.

We cannot assure you that you will receive the voting materials in time to ensure that you can instruct the Depositary to vote your H Shares. In addition, the Depositary and its agents are not responsible for failing to carry out voting instructions or for the manner of carrying out voting instructions, provided that any such action or inaction is in good faith. This means that you may not be able to exercise your right to vote and there may be nothing you can do if your H Shares are not voted as you requested.

Payment of Taxes and Fees

You will be responsible for any taxes or other governmental charges payable on your ADSs or on the deposited securities underlying your ADSs. The Depositary may refuse to transfer your ADSs or allow you to withdraw the deposited securities underlying your ADSs until such taxes or other charges are paid. It may apply payments owed to you or sell deposited securities underlying your ADSs to pay any taxes owed, and you will remain liable for any deficiency. If it sells deposited securities, it will, if appropriate, reduce the number of ADSs to reflect the sale and pay to you any proceeds, or send to you any property, remaining after it has paid the taxes.

See “Item 12. Description of Securities Other Than Equity Securities – D. American Depositary Shares” of this annual report for the fees charged by the Depositary.

Changes Affecting Deposited Securities

If there is any change in the nominal value of the deposited securities, split-up, consolidation or any other reclassification of the deposited securities, or any recapitalization, reorganization, merger or consolidation or sale of assets affecting us or to which we are a party, any new securities that will be received by the Depositary or the Custodian in exchange for or in respect of the H Shares underlying the ADSs will be treated as new deposited securities under the deposit agreement and underlying the ADSs. The Depositary may also, and will if we so request, execute and deliver additional ADRs as in the case of a dividend in H Shares, or call for the surrender of outstanding ADRs to be exchanged for new ADRs specifically describing such new deposited securities.

Amendment and Termination

How may the deposit agreement be amended?

We may agree with the Depositary to amend the deposit agreement and the form of the ADRs without your consent for any reason. If an amendment adds or increases fees or charges (except for taxes and other governmental charges, registration fees, cable, telex or facsimile transmission costs, delivery costs or such other expenses), or prejudices any substantial right of ADR holders, it will not become effective for outstanding ADRs until 30 days after the Depositary notifies ADR holders of the amendment. At the time an amendment becomes effective, you are considered, by continuing to hold your ADRs, to agree to the amendment and to be bound by the ADRs and the deposit agreement as amended.

No amendment shall impair your right to surrender ADRs and receive the deposited securities underlying the ADSs represented thereby, except in order to comply with mandatory provisions of applicable law.

How may the deposit agreement be terminated?

The Depositary will terminate the deposit agreement if we ask it to do so. The Depositary may also terminate the deposit agreement if the Depositary has told us that it would like to resign and we have not appointed a new depositary bank within 90 days. In both cases, the Depositary must notify you at least 90 days before termination.

After termination, the holder of ADRs will, upon surrender of its ADRs and payment of the fee for the surrender and any applicable taxes or governmental charges, be entitled to delivery, to him or upon his order, of the deposited securities underlying the ADSs represented thereby. After termination, if any ADRs remain outstanding, the Depositary and its agents will be required to do only the following under the deposit agreement:

- sell rights and other property as provided in the deposit agreement;
- collect distributions on the deposited securities; and
- deliver H Shares and other deposited securities and related distributions and net proceeds upon cancellation of the ADRs.

One year after termination, the Depositary may sell any remaining deposited securities by public or private sale and hold the net proceeds it receives on the sale, as well as any other cash it is holding under the deposit agreement, for the pro rata benefit of the holders of the ADRs which have not theretofore been surrendered. It will not invest the money and has no liability for interest. After making such sale, the Depositary's only obligations will be to account for the money and other cash and with respect to indemnification to us. After termination our only obligations will be with respect to indemnification and to pay various amounts to the Depositary.

Limitations on Obligations and Liability to ADR Holders

The deposit agreement expressly limits our obligations and the obligations of the Depositary. It also limits our liability and the liability of the Depositary. Among other things, we and the Depositary:

- are only obligated to take the actions specifically set forth in the deposit agreement without negligence or bad faith;
- are not liable if either of us or the Depositary is prevented or delayed by law or circumstances beyond our or its control from performing our or its obligations under the deposit agreement;
- are not liable if either of us or the Depositary exercises the discretion permitted under the deposit agreement;
- have no obligation to become involved in a lawsuit or other proceeding related to the ADRs or the deposit agreement on your behalf or on behalf of any other party; and
- may rely upon any documents we or the Depositary reasonably believes to be genuine and to have been signed or presented by the proper party, or rely upon the advice of or information from any person believed by us or it in good faith to be competent to give such advice or information.

In the deposit agreement, we and the Depositary agree to indemnify each other under certain circumstances. Disputes arising out of or relating to the deposit agreement shall be settled by arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association in the City of New York in English.

Requirements for Depositary Actions

Before the Depositary will deliver or register a transfer of an ADR, make a distribution on an ADR, or permit withdrawal of H Shares, the Depositary may require:

- payment of (i) stock transfer or other taxes or other governmental charges; (ii) transfer or registration fees charged by third parties for the transfer of any H Shares or other deposited securities; (iii) fees charged by the Depositary according to the deposit agreement;

- production of satisfactory proof of the identity and genuineness of any signature or other information it deems necessary or proper or as we may request;
- compliance with laws or governmental regulations relating to ADRs or ADSs or to the withdrawal of deposited securities; and
- compliance with requirements and procedures it may establish, from time to time, consistent with the deposit agreement, including the presentation of transfer documents.

The Depositary may refuse to deliver, transfer, or register transfers of ADRs generally when the transfer books of the Depositary, us or our share register are closed or at any time if the Depositary or we think it advisable to do so.

Your Right to Receive H Shares Underlying Your ADSs

You have the right to cancel your ADRs and withdraw the deposited securities underlying the ADSs represented thereby at any time, except:

- when temporary delays arise because: (i) the Depositary or we have closed its or our transfer books; (ii) the transfer of H Shares is blocked to permit voting at a shareholders' meeting; or (iii) we are paying a dividend on the H shares;
- when you or other ADR holders seeking to withdraw H shares owe money to pay fees, taxes and similar charges; or
- when it is necessary to prohibit withdrawals in order to comply with any laws or governmental regulations relating to the ADRs or ADSs or to the withdrawal of H Shares or other deposited securities.

This right of withdrawal may not be limited by any other provision of the deposit agreement.

Shareholder Communications; Inspection of Register of ADR Holders

The Depositary will make available for your inspection at its corporate trust office all reports and communications, including any proxy soliciting material, received from us that are both (i) received by the Depositary as a holder of deposited securities; and (ii) made generally available to holders of deposited securities by us. The Depositary will also, upon our request, send you copies of those reports and communications

The Depositary will keep books, at its corporate trust office, for the registration and transfers of ADRs which at all reasonable times shall be open for inspection by the ADR holders, provided that such inspection shall not be for the purpose of communicating with ADR holders in the interest of a business or object other than the business of the Company or a matter related to the deposit agreement or the ADRs.

Ownership Disclosures and Restrictions

ADR holders and beneficial owners may be requested to provide information to us regarding the capacity in which they own their ADRs, the identity of any persons previously or currently interested in their ADRs and the nature of such interest. ADR holders and beneficial owners agree to provide such information to the extent that it is available and can be disclosed under applicable law.

List of Subsidiaries of Aluminum Corporation of China Limited as of December 31, 2019

A list of Aluminum Corporation of China Limited's principal subsidiaries is provided in Note 1 to consolidated financial statements included in this annual report following Item 19.

CERTIFICATION

I, LU Dongliang, certify that:

1. I have reviewed this annual report on Form 20-F of Aluminum Corporation of China Limited (the "Company");
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the Company as of, and for, the periods presented in this report;
4. The Company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the Company and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the Company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the Company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the Company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting; and
5. The Company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the Company's auditors and the audit committee of the Company's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Company's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal control over financial reporting.

Date: April 22, 2020

By: /s/Lu Dongliang

Name: Lu Dongliang

Title: Executive Director and Chairman of the Board

CERTIFICATION

I, WANG Jun, certify that:

1. I have reviewed this annual report on Form 20-F of Aluminum Corporation of China Limited (the "Company");
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the Company as of, and for, the periods presented in this report;
4. The Company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the Company and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the Company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the Company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the Company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting; and
5. The Company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the Company's auditors and the audit committee of the Company's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Company's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal control over financial reporting.

Date: April 22, 2020

By: /s/Wang Jun

Name: Wang Jun

Title: Chief Financial Officer and Secretary to the Board

CERTIFICATION

In connection with the annual report on Form 20-F of Aluminum Corporation of China Limited (the "Company") for the year ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof, I, LU Dongliang, Executive Director and Chairman of the Board of the Company, certify, pursuant to Rule 13a-14(b) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge:

- (1) The annual report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the annual report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: April 22, 2020
By: /s/Lu Dongliang
Name: Lu Dongliang
Title: Executive Director and Chairman of the Board

The foregoing certification is being furnished solely pursuant to Rule 13a-14(b) under the Exchange Act and 18 U.S.C. Section 1350 and will not be deemed "filed" for purposes of Section 18 of the Exchange Act, or otherwise subject to the liability of that section.

CERTIFICATION

In connection with the annual report on Form 20-F of Aluminum Corporation of China Limited (the "Company") for the year ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof, I, WANG Jun, Chief Financial Officer and Secretary to the Board of the Company, certify, pursuant to Rule 13a-14(b) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge:

- (1) The annual report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the annual report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: April 22, 2020
By: /s/Wang Jun
Name: Wang Jun
Title: Chief Financial Officer and Secretary to the Board

The foregoing certification is being furnished solely pursuant to Rule 13a-14(b) under the Exchange Act and 18 U.S.C. Section 1350 and will not be deemed "filed" for purposes of Section 18 of the Exchange Act, or otherwise subject to the liability of that section.

April 22, 2020

Securities and Exchange Commission
100 F Street, N.E.
Washington, DC 20549

Ladies and Gentlemen:

We have read Item 16F of the Annual Report on Form 20-F for the year ended December 31, 2019 of Aluminum Corporation of China Limited and are in agreement with the statements contained in the first, second, third and fourth paragraphs included on page 137. We have no basis to agree or disagree with other statements of the registrant contained therein.

/s/ Ernst & Young Hua Ming LLP
