EN+ GROUP IPJSC

Consolidated Financial Statements for the year ended 31 December 2022

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Statement of Management's Responsibilities for the Preparation and Approval of the Consolidated Financial Statements for the year ended 31 December 2022

The following statement, which should be read in conjunction with the auditors' responsibilities stated in the auditors' report on the audit of the consolidated financial statements set out on pages 4-8, is made with a view to distinguishing the respective responsibilities of management and those of the auditors in relation to the consolidated financial statements of EN+ GROUP IPJSC and its subsidiaries.

Management is responsible for the preparation of the consolidated financial statements for the year ended 31 December 2022 in accordance with International Financial Reporting Standards ("IFRS").

In preparing the consolidated financial statements, management is responsible for:

- Selecting suitable accounting principles and applying them consistently;
- Making judgements and estimates that are reasonable and prudent;
- Stating whether International Financial Reporting Standards have been followed, subject to any material departures disclosed and explained in the consolidated financial statements; and
- Preparing the consolidated financial statements on a going concern basis, unless it is inappropriate to presume that the Group will continue in the business for the foreseeable future.

Management, within its competencies, is also responsible for:

- Designing, implementing and maintaining an effective system of internal controls throughout the Group;
- Maintaining statutory accounting records in compliance with local legislation and accounting standards in the respective jurisdictions in which the Group operates;
- Taking steps to safeguard the assets of the Group; and
- Detecting and preventing fraud and other irregularities.

These consolidated financial statements were approved by the Board of Directors on 22 March 2023 and were signed on its behalf by:

General Director of EN+ GROUP IPJSC — Vladimir Kiriukhin

NEW CHALLENGES
NEW SOLUTIONS

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Independent auditor's report

To the Shareholders and Board of Directors of
IPJSC EN+ GROUP

Opinion

We have audited the consolidated financial statements of IPJSC EN+ GROUP and its subsidiaries (hereinafter collectively referred to as the "Group"), which comprise the consolidated statement of financial position as at 31 December 2022, and consolidated statement of profit or loss and other comprehensive income, consolidated statement of changes in equity and consolidated statement of cash flows for the year then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as at 31 December 2022 and its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with International Financial Reporting Standards (IFRSs).

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (ISAs).
Our responsibilities under those standards are further described in the *Auditor's responsibilities for the audit of the consolidated financial statements* section of our report. We are independent of the Group in accordance with the International Ethics Standards Board for Accountants' (IESBA) International Code of Ethics for Professional Accountants (including International Independence Standards) (IESBA Code) together with the ethical requirements that are relevant to our audit of the consolidated financial statements in the Russian Federation, and we have fulfilled our other ethical responsibilities in accordance with these requirements and the IESBA Code. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Material uncertainty related to going concern

We draw attention to Note 1(e) of the consolidated financial statements as of 31 December 2022, which indicates that the geopolitical tensions and sanctions imposed by a range of countries, accompanied by the volatility of commodity, stock and currency markets, may significantly affect operational, investing and financing activity of the Group. As stated in Note 1(e), these events or conditions, along with other matters as set forth in Note 1(e) of the consolidated financial statements, indicate that material uncertainty exists that may cast significant doubt about the Group's ability to continue as a going concern. Our opinion is not modified in respect of this matter.

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Key audit matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period. In addition to the matters described in the *Material uncertainty related to going concern* section we have determined the matter described below to be the key audit matter to be communicated in our report. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on this matter. For the matter below, our description of how our audit addressed this matter is provided in that context.

We have fulfilled the responsibilities described in the *Auditor's responsibilities for the audit of the consolidated financial statements* section of our report, including in relation to this matter. Accordingly, our audit included the performance of procedures designed to respond to our assessment of the risks of material misstatement of the consolidated financial statements. The results of our audit procedures, including the procedures performed to address the matter below, provide the basis for our audit opinion on the accompanying consolidated financial statements.

Key audit matter	How our audit addressed the key audit matter
Impairment analysis of property, plant and equipment	
Impairment analysis of property, plant and equipment was a key audit matter due to the significance of property, plant and equipment balance in the consolidated financial statements, high subjectivity of judgments and estimates underlying the impairment analysis used by management. Current global market conditions, including fluctuations in LME aluminum prices, market premiums and alumina purchase prices together with their long-term forecasts, fluctuations of coal sale prices and additional volumes of electricity transmission set in further periods, increase of logistics costs may indicate that some cash generating units (CGU) may be subject to either impairment loss or full or partial reversal of previously recognized impairment. Evaluation of the recoverable amount of fixed assets is based on the higher of the fair value less cost to sell and value in use. As of the reporting date management makes an assessment of value-in-use based on the discounted cash flow models. Information on the results of the impairment testing is provided in Note 11 (c) to the consolidated financial statements.	We analized management's assessment of whether indicators for potential impairment or reversal of impairment previously recorded exist. For the impairment tests performed our procedures included, among others: ▸ Comparison of key assumptions such as production volumes, forecasted aluminum sales prices, forecasted electricity tariffs and transmission volumes, forecasted coal sales prices and volumes, forecasted alumina and bauxites purchase prices, forecasted costs inflation, forecasted currency exchange rates, discount rates, used in the Group's financial model with published macroeconomic indicators and forecast data; ▸ Assessing the historical accuracy of management's budgets and forecasts by comparing them to actual performance; ▸ Checking the arithmetic accuracy of the impairment model and assessing a sensitivity analysis of value-in-use to changes in key assumptions. With assistance of our internal valuation experts we analyzed the Group's management calculations of the recoverable amount of fixed assets. We assessed the impairment related disclosures in the consolidated financial statements, including the key assumptions used and the sensitivity of the consolidated financial statements to these assumptions.

NEW CHALLENGES
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Other information included in the Annual Report

Other information consists of the information included in the Annual Report other than the consolidated financial statements and our auditor's report thereon. Management is responsible for the other information. The Annual Report is expected to be made available to us after the date of this auditor's report.

Our opinion on the consolidated financial statements does not cover the other information and we will not express any form of assurance conclusion thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information identified above when it becomes available and, in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

Responsibilities of management and the Board of Directors for the consolidated financial statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with IFRSs, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

The Board of Directors is responsible for overseeing the Group's financial reporting process.

Auditor's responsibilities for the audit of the consolidated financial statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

NEW CHALLENGES
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As part of an audit in accordance with ISAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with the Board of Directors regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the Board of Directors with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, actions taken to eliminate threats or safeguards applied.

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From the matters communicated with the Board of Directors, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

The partner in charge of the audit resulting in this independent auditor's report is Mikhail Khachaturian.

M.S. Khachaturian
General director of TSATR – Audit Services Limited Liability Company,
partner in charge of the audit resulting in this independent auditor's report
(main registration number 21906108270)

22 March 2023

Details of the auditor

Name: TSATR – Audit Services Limited Liability Company
Record made in the State Register of Legal Entities on 5 December 2002, State Registration Number 1027739707203.
Address: Russia 115035, Moscow, Sadovnicheskaya naberezhnaya, 77, building 1.
TSATR – Audit Services Limited Liability Company is a member of Self-regulatory organization of auditors Association "Sodruzhestvo". TSATR – Audit Services Limited Liability Company is included in the control copy of the register of auditors and audit organizations, main registration number 12006020327.

Details of the audited entity

Name: IPJSC EN+ GROUP
Record made in the State Register of Legal Entities on 9 July 2019, State Registration Number 1193926010398.
Address: Russia 236006, Kaliningrad, Oktyabrskaya street, b. 8, office 34.

		Year ended 31 December	
		2022	**2021**
	Note	**USD million**	**USD million**
Revenues	5	16,549	14,126
Cost of sales		(12,056)	(9,174)
Gross profit		**4,493**	**4,952**
Distribution expenses		(793)	(708)
General and administrative expenses		(1,071)	(861)
Impairment of non-current assets	11	(370)	(267)
Other operating expenses, net	6	(253)	(218)
Results from operating activities		**2,006**	**2,898**
Share of profits of associates and joint ventures	13	1,553	1,802
Gain from partial disposal of investment in associate	13	–	492
Finance income	8	184	87
Finance costs	8	(1,290)	(1,141)
Profit before tax		**2,453**	**4,138**
Income tax expense	10	(607)	(604)
Profit for the year		**1,846**	**3,534**
Attributable to:			
Shareholders of the Parent Company		1,083	2,142
Non-controlling interests	16(g)	763	1,392
Profit for the year		**1,846**	**3,534**
Earnings per share			
Basic and diluted earnings per share (USD)	9	2.156	4.264

The consolidated statement of profit or loss and other comprehensive income is to be read in conjunction with the notes to, and forming part of, the consolidated financial statements set out on pages 15 to 84.

		Year ended 31 December	
		2022	2021
	Note	USD million	USD million
Profit for the year		**1,846**	**3,534**
Other comprehensive income/(loss)			
Items that will never be reclassified subsequently to profit or loss			
Actuarial gain/(loss) on post-retirement benefit plans	18(b)	11	(4)
Revaluation of non-current assets	11(e)	650	–
Taxation	10(c)	(132)	–
		529	**(4)**
Items that are or may be reclassified subsequently to profit or loss			
Reclassification of accumulated foreign currency translation loss to statement of profit or loss due to partial disposal of investment in associate	13	–	613
Foreign currency translation differences on foreign subsidiaries		(47)	25
Foreign currency translation differences for equity-accounted investees	13	369	21
Change in fair value of cash flow hedge	19	(131)	(28)
		191	**631**
Other comprehensive income for the year, net of tax		**720**	**627**
Total comprehensive income for the year		**2,566**	**4,161**
Attributable to:			
Shareholders of the Parent Company		1,669	2,488
Non-controlling interests	16(g)	897	1,673
Total comprehensive income for the year		**2,566**	**4,161**

The consolidated statement of profit or loss and other comprehensive income is to be read in conjunction with the notes to, and forming part of, the consolidated financial statements set out on pages 15 to 84.

	Note	31 December 2022 USD million	31 December 2021 USD million
Assets			
Non-current assets			
Property, plant and equipment	11	11,607	10,117
Goodwill and intangible assets	12	2,417	2,199
Interests in associates and joint ventures	13	5,194	4,028
Deferred tax assets	10(b)	98	150
Investments in equity securities measured at fair value through profit and loss	15(h)	459	316
Derivative financial assets	19	90	22
Other non-current assets	15(g)	311	258
Total non-current assets		**20,176**	**17,090**
Current assets			
Inventories	14	4,383	3,731
Trade and other receivables	15(b)	1,477	1,969
Prepayments and VAT recoverable	15(c)	820	668
Income tax receivable	10(e)	217	18
Short-term investments		50	131
Derivative financial assets	19	78	120
Cash and cash equivalents	15(f)	3,477	2,330
Total current assets		**10,502**	**8,967**
Total assets		**30,678**	**26,057**
Equity and liabilities			
Equity	16		
Share capital		–	–
Share premium		1,516	1,516
Treasury shares		(1,579)	(1,579)
Additional paid-in capital		9,193	9,193
Revaluation reserve		3,480	2,945
Other reserves		82	153
Foreign currency translation reserve		(5,422)	(5,561)
Retained earnings / (accumulated losses)		210	(892)
Total equity attributable to shareholders of the Parent Company		**7,480**	**5,775**
Non-controlling interests	16(g)	5,252	4,536
Total equity		**12,732**	**10,311**
Non-current liabilities			
Loans and borrowings	17	9,702	8,174
Deferred tax liabilities	10(b)	1,222	1,064
Provisions – non-current portion	18	380	485
Derivative financial liabilities	19	–	61
Other non-current liabilities		175	113
Total non-current liabilities		**11,479**	**9,897**
Current liabilities			
Loans and borrowings	17	3,898	2,737
Provisions – current portion	18	146	161
Trade and other payables	15(d)	1,687	1,328
Advances received	15(e)	309	1,163
Other taxes payable		427	315
Derivative financial liabilities	19	–	145
Total current liabilities		**6,467**	**5,849**
Total equity and liabilities		**30,678**	**26,057**

The consolidated statement of financial position is to be read in conjunction with the notes to, and forming part of, the consolidated financial statements set out on pages 15 to 84.

	Note	Year ended 31 December 2022 USD million	Year ended 31 December 2021 USD million
Operating activities			
Profit for the year		**1,846**	**3,534**
Adjustments for:			
Depreciation and amortisation		720	822
Impairment of non-current assets		370	267
Net foreign exchange loss	8	111	33
Loss on disposal of property, plant and equipment	6	23	5
Share of profits of associates and joint ventures	13	(1,553)	(1,802)
Gain on partial disposal of investment in associate	13	–	(492)
Interest expense	8	988	709
Interest income	8	(115)	(65)
Dividend income	8	(38)	(22)
Income tax expense	10	607	604
Write-down of inventories to net realisable value		172	24
Impairment of trade and other receivables	6	169	65
Provision for legal claims		10	10
Change in fair value of derivative financial instruments	8	191	352
Revaluation of financial assets	8	(31)	47
Operating profit before changes in working capital		**3,470**	**4,091**
Increase in inventories		(1,098)	(1,373)
Increase in trade and other receivables and advances paid		(418)	(455)
(Decrease)/increase in trade and other payables and advances received		(783)	434
Cash flows from operations before income tax		**1,171**	**2,697**
Income taxes paid	10(e)	(599)	(529)
Cash flows from operating activities		**572**	**2,168**

The consolidated statement of cash flows is to be read in conjunction with the notes to, and forming part of, the consolidated financial statements set out on pages 15 to 84.

	Note	Year ended 31 December 2022 USD million	2021 USD million
Investing activities			
Proceeds from disposal of property, plant and equipment		8	20
Acquisition of property, plant and equipment		(1,674)	(1,485)
Acquisition of intangible assets		(37)	(28)
Cash paid for investment in equity securities measured at fair value through profit and loss	15(h)	(113)	(291)
Cash received from other investments		111	39
Interest received		104	63
Dividends from associates and joint ventures		1,639	620
Dividends from financial assets		34	34
Proceeds from partial disposal of associate		–	1,421
Contribution to associates and joint ventures	13	(8)	(9)
Cash outflow from disposal of subsidiary		(16)	–
Prepayment for and acquisition of subsidiaries		–	(99)
Change in restricted cash		(1)	–
Cash flows from investing activities		**47**	**285**
Financing activities			
Proceeds from borrowings		9,129	2,881
Repayment of borrowings		(7,007)	(4,474)
Acquisition of non-controlling interest	16(a)	(14)	(44)
Interest paid		(987)	(703)
Restructuring fees		(21)	(36)
Settlement of derivative financial instruments		(229)	(315)
Dividends to non-controlling shareholders		(129)	–
Cash flows from / (used in) financing activities		**742**	**(2,691)**
Net increase/(decrease) in cash and cash equivalents		**1,361**	**(238)**
Cash and cash equivalents at beginning of the year, excluding restricted cash		2,328	2,549
Effect of exchange rate changes on cash and cash equivalents		(215)	17
Cash and cash equivalents at end of the year, excluding restricted cash	15(f)	**3,474**	**2,328**

Restricted cash amounted to USD 3 million and USD 2 million at 31 December 2022 and 31 December 2021, respectively.

The consolidated statement of cash flows is to be read in conjunction with the notes to, and forming part of, the consolidated financial statements set out on pages 15 to 84.

	Attributable to shareholders of the Parent Company									
USD million	**Share premium**	**Treasury share reserve**	**Additional paid-in capital**	**Revaluation reserve**	**Other reserves**	**Foreign currency translation reserve**	**Retained earnings/ (accumulated losses)**	**Total**	**Non-controlling interests**	**Total equity**
Balance at 1 January 2021	**1,516**	**(1,579)**	**9,193**	**2,902**	**169**	**(5,923)**	**(3,122)**	**3,156**	**2,909**	**6,065**
Comprehensive income										
Profit for the year	–	–	–	–	–	–	2,142	**2,142**	1,392	**3,534**
Other comprehensive (loss)/income	–	–	–	–	(16)	362	–	**346**	281	**627**
Total comprehensive (loss)/income for the year	**–**	**–**	**–**		**(16)**	**362**	**2,142**	**2,488**	**1,673**	**4,161**
Share of equity transactions of an associate (note 13)	–	–	–	–	–	–	73	**73**	56	**129**
Transactions with owners										
Change in effective interest in subsidiaries (note 16(a))	–	–	–	43	–	–	15	**58**	(102)	**(44)**
Total transactions with owners	**–**	**–**	**–**	**43**	**–**	**–**	**15**	**58**	**(102)**	**(44)**
Balance 31 December 2021	**1,516**	**(1,579)**	**9,193**	**2,945**	**153**	**(5,561)**	**(892)**	**5,775**	**4,536**	**10,311**
Balance at 1 January 2022	**1,516**	**(1,579)**	**9,193**	**2,945**	**153**	**(5,561)**	**(892)**	**5,775**	**4,536**	**10,311**
Comprehensive income										
Profit for the year	–	–	–	–	–	–	1,083	**1,083**	763	**1,846**
Other comprehensive income/(loss)	**–**	**–**	**–**	**518**	**(71)**	**139**	**–**	**586**	**134**	**720**
Revaluation of hydro assets (note 11(e))	–	–	–	650	–	–	–	**650**	–	**650**
Taxation (note 10(c))	–	–	–	(132)	–	–	–	**(132)**	–	**(132)**
Other comprehensive (loss)/income	–	–	–	–	(71)	139	–	**68**	134	**202**
Total comprehensive income/(loss) for the year	**–**	**–**	**–**	**518**	**(71)**	**139**	**1,083**	**1,669**	**897**	**2,566**
Transactions with owners										
Change in effective interest in subsidiaries (note 16(a))	–	–	–	17	–	–	19	**36**	(50)	**(14)**
Dividends to non-controlling shareholders (note 16(e))	–	–	–	–	–	–	–	**–**	(131)	**(131)**
Total transactions with owners	**–**	**–**	**–**	**17**	**–**	**–**	**19**	**36**	**(181)**	**(145)**
Balance 31 December 2022	**1,516**	**(1,579)**	**9,193**	**3,480**	**82**	**(5,422)**	**210**	**7,480**	**5,252**	**12,732**

The consolidated statement of changes in equity is to be read in conjunction with the notes to, and forming part of, the consolidated financial statements set out on pages 15 to 84.

1. Background

(a) Organisation

EN+ GROUP IPJSC (the "Parent Company" or EN+) was established as a limited liability company according to the legislation of the British Virgin Islands on 30 April 2002 under the name of Baufinanz Limited. On 18 March 2004, the Parent Company registered a change of its legal name to Eagle Capital Group Limited. On 25 August 2005, the Parent Company changed its domicile to Jersey and was renamed to En+ Group Limited. On 1 June 2017, the Parent Company changed its status to a public company and was renamed to EN+ GROUP PLC. On 9 July 2019, the Parent Company changed its domicile to the Russian Federation with a registration as EN+ GROUP International public joint-stock company (EN+ GROUP IPJSC). The Parent Company's registered office is Oktyabrskaya st. 8, office 34, Kaliningrad, Kaliningrad Region, 236006, Russian Federation.

On 8 November 2017, the Parent Company successfully completed an initial public offering of global depositary receipts on the London Stock Exchange. On 17 February 2020, the Parent Company's ordinary shares were included into the "Level 1" part of the list of securities admitted to trading on Moscow Exchange.

EN+ GROUP IPJSC is the parent company for a vertically integrated aluminium and power group, engaged in aluminium production and energy generation (together with the Parent Company referred to as "the Group").

As at 31 December 2022 Mr. Oleg Deripaska beneficially controls and exercises voting rights in respect of 35% of the voting shares of the Parent Company and his direct or indirect shareholding cannot exceed 44.95% of the shares of the Parent Company.

The other significant holders as at 31 December 2022 were as follows:

	Shareholding	**Voting rights**
Parent Company's subsidiary	21.37%	7.04%
Glencore Group Funding Limited	10.55%	10.55%
Other shareholders	23.13%	13.96%
Independent trustees	–	33.45%

Glencore Group Funding Limited is a subsidiary of Glencore Plc.

Based on the information at the Group's disposal at the reporting date, there is no individual that has an indirect prevailing ownership interest in the Parent Company exceeding 50%, who could exercise voting rights in respect of more than 35% of the Parent Company's issued share capital or has an opportunity to exercise control over the Parent Company.

Related party transactions are detailed in note 23.

(b) Operations

The Group is a leading vertically integrated aluminium and power producer, which combines the assets and results of its Metals and Power segments.

The Metals segment operates in the aluminium industry primarily in the Russian Federation, Ukraine, Guinea, Jamaica, Ireland, Italy and Sweden and is principally engaged in the mining and refining of bauxite and nepheline ore into alumina, the smelting of primary aluminium from alumina and the fabrication of aluminium and aluminium alloys into semi-fabricated and finished products.

The Power segment engages in all major areas of the power industry, including electric power generation, power trading and supply. It also includes supporting operations engaged in the supply of coal resources to the Group. The Group's principal power plants are located in East Siberia and Volga Region, the Russian Federation.

(c) Business environment in emerging economies

The Russian Federation, Ukraine, Jamaica and Guinea have been experiencing political and economic changes that have affected, and may continue to affect, the activities of enterprises operating in these environments. Consequently, operations in these countries involve risks that typically do not exist in other markets, including reconsideration of privatisation terms in certain countries where the Group operates following changes in governing political powers.

The imposition of economic sanctions on Russian individuals and legal entities by the European Union, the United States of America, Japan, Canada, Australia and others, as well as counter sanctions imposed by the Russian government, has resulted in increased economic uncertainty including more volatile equity, commodity and currency markets. The longer term effects of implemented sanctions, as well as the threat of additional future sanctions, are difficult to determine.

The consolidated financial statements reflect management's assessment of the impact of the Russian, Ukrainian, Jamaican and Guinean business environments on the operations and the financial position of the Group. The future business environment may differ from management's assessment.

(d) OFAC sanctions

On 6 April 2018, the U.S. Department of the Treasury's Office of Foreign Assets Control ("OFAC") designated, amongst others, the Parent Company, JSC "EuroSibEnergo" ("EuroSibEnergo") and UC RUSAL Plc (from 25 September 2020 UC RUSAL IPJSC, "UC RUSAL") as Specially Designated Nationals ("SDN") (the "OFAC Sanctions").

As a result, all property or interests in property of the Parent Company and its subsidiaries located in the United States or in the possession of U.S. Persons were blocked, frozen, and could not have been transferred, paid, exported, withdrawn, or otherwise dealt in. Several general licenses were issued at the time of the designation and subsequently certain transactions were authorised with the Parent Company, EuroSibEnergo and UC RUSAL, and with their respective debt and equity.

On 27 January 2019, OFAC announced the removal of the Parent Company and its subsidiaries, including UC RUSAL and EuroSibEnergo, from OFAC's SDN list and Blocked Persons with immediate effect. The removal was subject to and conditional upon the satisfaction of a number of conditions including, but not limited to:

- Ending Mr. Oleg Deripaska's control of the Group, through the reduction of his direct and indirect ownership interest in the Parent Company to below 50%;
- Establishing independent voting arrangements for the Parent Company's shares held by certain shareholders;
- Corporate governance changes, including, inter alia, overhauling the composition of the EN+ Board to ensure that independent directors constitute the majority of the Board, and ongoing reporting and certifications by the Parent Company and UC RUSAL to OFAC concerning compliance with the conditions for sanctions' removal.

(e) Going concern

These consolidated financial statements have been prepared assuming that the Group will continue as a going concern. Accordingly, these statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts, the amounts and classification of liabilities or any other adjustments that might result from the Group being unable to continue as a going concern.

Ban of Australian government for the export of alumina and bauxite to Russia introduced in March, 2022 and temporary suspension of production at Mykolaiv Alumina Refinery Company Ltd due to developments in Ukraine starting from 1 March 2022 influenced the availability of alumina and bauxite or increase the purchase prices for the Group. Difficulties with logistics caused the Group to rebuild the supply and sales chains and lead to additional logistics costs. If the situation in Ukraine and overall geopolitical tension persists or continues to develop significantly, including the loss of significant parts of foreign markets, which cannot be reallocated to new markets, it may affect the Group's business, financial condition, prospects and results of operations.

Potentially the Group may have difficulties with equipment deliveries that may postpone realization of some investment projects and modernization programs for existing production facilities.

The facts described above, as well as the volatility of commodity markets, stock, currency markets and interest rates, create material uncertainty in the Group's ability to meet its financial obligations on time and continue as a going concern entity. Management constantly evaluates the current situation and prepares forecasts taking into account different scenarios of the events and conditions development. The Group's management expects that prices on the world commodity markets will grow and improve the results of operating activities. The Group is also revising its supply and sales chains, ensuring an optimal equity and debt ratio, searching for resolutions of logistic difficulties, as well as the ways to survive its obligations in order to adapt the current economic changes to maintain the continuance of the Group's operations (note 24).

2. Basis of preparation

(a) Statement of compliance

These consolidated financial statements have been prepared in accordance with International Financial Reporting Standards ("IFRSs"), which collective term includes all International Accounting Standards and related interpretations promulgated by the International Accounting Standards Board ("IASB").

Preparation of these consolidated financial statements is also regulated by Russian Federal Law 208-FZ dated 27 July 2010 *On Consolidated Financial Statements* in all aspects, except for language and functional and presentation currencies, which are regulated by Russian Federal Law 290-FZ dated 3 August 2018 *On International Companies and International Funds*.

The Group applied for the first-time certain standards and amendments, which are effective for annual periods beginning on or after 1 January 2022 (unless otherwise stated).

- *Onerous Contracts – Costs of Fulfilling a Contract* – Amendments to IAS 37;
- *Reference to the Conceptual Framework* – Amendments to IFRS 3;
- *Property, Plant and Equipment: Proceeds before Intended Use* – Amendments to IAS 16;
- IFRS 1 *First-time Adoption of International Financial Reporting Standards* – Subsidiary as a first-time adopter;
- IFRS 9 *Financial Instruments* – Fees in the '10 per cent' test for derecognition of financial liabilities.

These amendments had no impact on the consolidated financial statements of the Group.

(b) Standards issued but not effective

The new and amended standards and interpretations that are issued, but not yet effective, up to the date of issuance of the Group's financial statements are disclosed below. The Group intends to adopt these new and amended standards and interpretations, if applicable, when they become effective.

- IFRS 17 *Insurance Contracts*;
- Amendments to IAS 1: *Classification of Liabilities as Current or Non-current*;
- Amendments to IAS 1: *Non-current Liabilities with Covenants*;
- *Definition of Accounting Estimates* − Amendments to IAS 8;
- *Disclosure of Accounting Policies* − Amendments to IAS 1 and IFRS Practice Statement 2;
- *Deferred Tax related to Assets and Liabilities arising from a Single Transaction* − Amendments to IAS 12;
- Amendments to IFRS 16: *Lease Liability in a Sale and Leaseback*.

The Group is currently assessing the impact the amendments will have on current practice, when they become effective.

(c) Basis of measurement

The consolidated financial statements have been prepared in accordance with the historical cost basis except as set out in the significant accounting policies in notes 11 and 19.

(d) Functional and presentation currency

The functional currencies of the Parent Company and Group's significant subsidiaries are the currencies of the primary economic environment and key business processes of these subsidiaries and include USD, Russian roubles ("RUB"), Ukrainian hryvna and euros ("EUR"). The consolidated financial statements are presented in USD, rounded to the nearest million, except as otherwise stated herein.

The functional currencies of investments in associates and joint ventures are RUB, Kazakhstani tenge and Australian dollar.

(e) Use of judgements, estimates and assumptions

The preparation of consolidated financial statements in conformity with IFRSs requires management to make judgements, estimates and assumptions that affect the application of accounting policies and reported amounts of assets and liabilities and the disclosure of contingent liabilities at the date of the consolidated financial statements, and the reported revenue and costs during the relevant period.

Management bases its judgements and estimates on historical experience and various other factors that are believed to be appropriate and reasonable under the circumstances, the results of which form the basis of making the judgements about carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions and conditions.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimate is revised if the revision affects only that period, or in the period of the revision and future periods if the revision affects both current and future periods.

Judgements made by management in the application of IFRSs that have a significant effect on the consolidated financial statements and estimates with a significant risk of material adjustment in the next year are discussed in note 25.

3. Significant accounting policies

Significant accounting policies are described in the related notes to the consolidated financial statements captions and in this note.

The accounting policies and judgements applied by the Group in these consolidated financial statements are the same as those applied by the Group in its consolidated financial statements as at and for the year ended 31 December 2021, except for those disclosed in 2(a).

(a) Basis of consolidation

(i) Subsidiaries and non-controlling interests

Subsidiaries are entities controlled by the Group. The Group controls an entity when it is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. When assessing control substantive potential voting rights are taken into account.

The consolidated financial statements of subsidiaries are included in the consolidated financial statements from the date that control commences until the date that control ceases. The accounting policies of subsidiaries have been changed when necessary to align them with the policies adopted by the Group.

Non-controlling interests represent the portion of the net assets of subsidiaries attributable to interests that are not owned by the Group, whether directly or indirectly through subsidiaries, and in respect of which the Group has not agreed any additional terms with the holders of those interests which would result in the Group as a whole having a contractual obligation in respect of those interests that meets the definition of a financial liability.

Non-controlling interests are presented in the consolidated statement of financial position within equity, separately from equity attributable to the equity shareholders of the Parent Company. Non-controlling interests in the results of the Group are presented on the face of the consolidated statement of profit or loss and other comprehensive income as an allocation of the total profit or loss and total comprehensive income for the year between non-controlling interests and the equity shareholders of the Parent Company.

Losses applicable to the non-controlling interests in a subsidiary are allocated to the non-controlling interests even if doing so causes the non-controlling interests to have a deficit balance.

Changes in the Group's interest in a subsidiary that do not result in a loss of control are accounted for as equity transactions, whereby adjustments are made to the amounts of controlling and non-controlling-interests within consolidated equity to reflect the change in relative interests, but no adjustments are made to goodwill and no gain or loss is recognised.

When the Group loses control of a subsidiary, it is accounted for as a disposal of the entire interest in that subsidiary, with a resulting gain or loss being recognised in profit or loss. Any interest retained in that former subsidiary at the date when control is lost is recognised at fair value and this amount is regarded as the fair value on initial recognition of a financial asset (refer to note 15) or, when appropriate, the cost on initial recognition of an investment in an associate or joint venture (refer to note 13).

(ii) Acquisitions of non-controlling interests

The acquisition of an additional non-controlling interest in an existing subsidiary after control has been obtained is accounted for as an equity transaction with any difference between the cost of the additional investment and the carrying amount of the net assets acquired at the date of exchange recognised directly in equity.

The issue of a put option (a mandatory offer) to acquire a non-controlling interest in subsidiary, after control has been obtained and is accounted for by the Group as an equity transaction, results in the recognition of a liability for the present value of the expected exercise price and the derecognition of non-controlling interests within consolidated equity. Subsequent to initial recognition, changes in the carrying amount of the put liability are recognised within equity. If the put option expires unexercised then the put liability is derecognised and non-controlling interests are recognised.

For a written put or forward option with the non-controlling shareholders in an existing subsidiary on their equity interest in that subsidiary, if the non-controlling shareholders do not have present access to the returns associated with the underlying ownership interest, the contract is accounted for as an anticipated acquisition of the underlying non-controlling interests, as if the put option had been exercised already or the forward had been satisfied by the non-controlling shareholders.

(iii) Transactions eliminated on consolidation

Intra-group balances and transactions, and any unrealised income and expenses arising from intra-group transactions, are eliminated in preparing the consolidated financial statements. Unrealised gains arising from transactions with equity accounted investees are eliminated against the investment to the extent of the Group's interest in the investee. Unrealised losses are eliminated in the same way as unrealised gains, but only to the extent that there is no evidence of impairment.

(b) Foreign currencies

(i) Foreign currency transactions

Transactions in foreign currencies are translated into the respective functional currencies of Group entities at the exchange rates ruling at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies at the reporting date are retranslated to the functional currency at the exchange rate at that date. The foreign currency gain or loss on monetary items is the difference between the amortised cost in the functional currency at the beginning of the period, adjusted for effective interest and payments during the period, and the amortised cost in foreign currency translated at the exchange rate at the end of the reporting period. Non-monetary items in a foreign currency are measured based on historical cost and are translated using the exchange rate at the date of transaction. Foreign currency differences arising on retranslation are recognised in profit or loss, except for differences arising on the retranslation of qualifying cash flow hedges to the extent the hedge is effective, which is recognised in other comprehensive income.

(ii) Foreign operations

The assets and liabilities of foreign operations, including goodwill and fair value adjustments arising on acquisition, are translated from their functional currencies to USD at the exchange rates ruling at the reporting date. The income and expenses of foreign operations are translated to USD at exchange rates approximating exchange rates at the dates of the transactions.

Foreign currency differences arising on translation are recognised in other comprehensive income and presented in the currency translation reserve in equity. For the purposes of foreign currency translation, the net investment in a foreign operation includes foreign currency intra-group balances for which settlement is neither planned nor likely in the foreseeable future and foreign currency differences arising from such a monetary item are recognised as part of other comprehensive income in the statement of profit or loss and other comprehensive income.

When a foreign operation is disposed of, such that control, significant influence or joint control is lost, the cumulative amount of the currency translation reserve is transferred to profit or loss as part of the gain or loss on disposal. When the Group disposes of only part of its interest in a subsidiary that includes a foreign operation while retaining control, the relevant proportion of the cumulative amount is reattributed to non-controlling interests. When the Group disposes of only part of its investment in an associate or joint venture that includes a foreign operation while retaining significant influence or joint control, the relevant proportion of the cumulative amount is reclassified to profit or loss.

When the settlement of a monetary item receivable from or payable to a foreign operation is neither planned nor likely in the foreseeable future, foreign exchange gains and losses arising from such a monetary item are considered to form part of a net investment in a foreign operation and are recognised in other comprehensive income, and presented in the translation reserve in equity.

4. Segment reporting

(a) Reportable segments

An operating segment is a component of the Group that engages in business activities from which it may earn revenue and incur expenses, including revenue and expenses that relate to transactions with any of the Group's other components. All operating segments' operating results are reviewed regularly by the Group's key executive management personnel and Board of Directors to make decisions about resources to be allocated to the segment and assess its performance and for which discrete financial statements are available.

Individually material operating segments are not aggregated for financial reporting purposes unless the segments have similar economic characteristics and are similar in respect of the nature of products and services, the nature of production processes, the type or class of customers, the methods used to distribute the products or provide the services and the nature of the regulatory environment. Operating segments which are not individually material may be aggregated if they share a majority of these criteria.

Based on the current management structure and internal reporting the Group has identified two operating segments:

a) *Metals.* The Metals segment comprises UC RUSAL with disclosures being based on the public financial statements of UC RUSAL. All adjustments made to UC RUSAL, including any adjustments arising from different timing of IFRS first time adoption, are included in "Adjustments" column.

   The Power assets of UC RUSAL are included within the Metals segment.

b) *Power.* The Power segment mainly comprises the power assets, as described in note 1(b).

These business units are managed separately and the results of their operations are reviewed by the key executive management personnel and Board of Directors on a regular basis.

(b) Segment results, assets and liabilities

For the purposes of assessing segment performance and allocating resources between segments, the Group's senior executive management monitor the results, assets and liabilities and cash flows attributable to each reportable segment on the following bases:

- Total segment assets include all non-current tangible, intangible assets and current assets.
- Total segment liabilities include all current and non-current liabilities.
- Revenue and expenses are allocated to the reportable segments with reference to sales generated by those segments and the expenses incurred by those segments or which otherwise arise from the depreciation or amortisation of assets attributable to those segments.
- The measures used for reporting segment results are the net profit and Adjusted EBITDA (key non-IFRS financial measure used by the Group as reference for assessing operating effectiveness). Segment profit or loss and Adjusted EBITDA are used to measure performance as management believes that such information is the most relevant in evaluating the results of certain segments relative to other entities that operate within these industries.
- Adjusted EBITDA represents the results from operating activities adjusted for amortisation and depreciation, impairment charges and gain/(losses) on disposal of property, plant and equipment for the relevant period.

In addition to receiving segment information concerning segment results, management is provided with segment information concerning revenue (including inter-segment revenue), the carrying value of investments and share of profits/(losses) of associates and joint ventures, depreciation, amortisation, interest income and expenses, other finance income and costs, income tax, gains/(losses) on disposal of property, plant and equipment, impairment of non-current assets and additions of non-current segment assets used by the segments in their operations. Inter-segment pricing is determined primarily on a consistent basis using market benchmarks.

Year ended 31 December 2022

USD million	**Metals**	**Power**	**Adjustments**	**Total**
Consolidated statement of profit or loss and other comprehensive income				
Revenue from external customers	13,755	2,794	–	**16,549**
Primary aluminium and alloys	11,384	–	–	**11,381**
Alumina and bauxite	557	–	–	**557**
Semi-finished products and foil	581	340	–	**921**
Electricity	233	1,611	–	**1,843**
Heat	62	463	–	**525**
Other	938	380	–	**1,322**
Inter-segment revenue	*219*	*1,091*	*(1,310)*	**–**
Total segment revenue	**13,974**	**3,885**	**(1,310)**	**16,549**
Operating expenses (excluding depreciation and loss on disposal of PPE)	(11,946)	(2,631)	1,147	**(13,430)**
Adjusted EBITDA	**2,028**	**1,254**	**(163)**	**3,119**
Depreciation and amortisation	(503)	(221)	4	**(720)**
Loss on disposal of property, plant and equipment	(13)	(10)	–	**(23)**
Impairment of non-current assets	(196)	(174)	–	**(370)**
Results from operating activities	**1,316**	**849**	**(159)**	**2,006**
Share of profits and impairment of associates and joint ventures	1,555	(2)	–	**1,553**
Interest expense, net	(349)	(524)	–	**(873)**
Other finance costs, net	(356)	296	(173)	**(233)**
Profit before tax	**2,166**	**619**	**(332)**	**2,453**
Income tax expense	(373)	(235)	1	**(607)**
Profit for the year	**1,793**	**384**	**(331)**	**1,846**
Additions to non-current segment assets during the year (note 11(b))	(1,242)	(523)	–	**(1,765)**

USD million	Metals	Power	Adjustments	Total
Consolidated statement of financial position				
Segment assets, excluding cash and cash equivalents and interests in associates and joint ventures	16,261	6,690	(944)	**22,007**
Investment in metals segment	–	4,595	(4,595)	**–**
Cash and cash equivalents	3,196	281	–	**3,477**
Interests in associates and joint ventures	5,174	20	–	**5,194**
Total segment assets	**24,631**	**11,586**	**(5,539)**	**30,678**
Segment liabilities, excluding loans, borrowings and bonds payable	2,867	1,680	(201)	**4,346**
Loans, borrowings and bonds payable	9,457	4,143	–	**13,600**
Total segment liabilities	**12,324**	**5,823**	**(201)**	**17,946**
Total segment equity	12,307	5,763	(5,338)	**12,732**
Total segment equity and liabilities	**24,631**	**11,586**	**(5,539)**	**30,678**
Consolidated statement of cash flows				
Cash flows (used in) / from operating activities	**(412)**	**986**	**(2)**	**572**
Cash flows from / (used in) investing activities	**472**	**(254)**	**(171)**	**47**
Acquisition of property, plant and equipment, intangible assets	(1,239)	(474)	2	**(1,711)**
Cash paid for investment in equity securities measured at fair value through profit and loss	(113)	–	–	**(113)**
Cash received from other investments	97	14	–	**111**
Dividends from associates and joint ventures	1,639	–	–	**1,639**
Dividends from Metals segment	–	173	(173)	**–**
Interest received	70	34	–	**104**
Other investing activities	18	(1)	–	**17**
Cash flows from / (used in) financing activities	**1,415**	**(846)**	**173**	**742**
Interest paid	(428)	(559)	–	**(987)**
Restructuring fees	(17)	(4)	–	**(21)**
Settlements of derivative financial instruments	(229)	–	–	**(229)**
Dividends to Power segment	(173)	–	173	**–**
Dividends to non-controlling shareholders	(129)	–	–	**(129)**
Other financing activities	2,391	(283)	–	**2,108**
Net change in cash and cash equivalents	**1,475**	**(114)**	**–**	**1,361**

Year ended 31 December 2021

USD million	**Metals**	**Power**	**Adjustments**	**Total**
Consolidated statement of profit or loss and other comprehensive income				
Revenue from external customers	*11,790*	*2,336*	–	***14,126***
Primary aluminium and alloys	9,766	–	–	**9,766**
Alumina and bauxite	612	–	–	**612**
Semi-finished products and foil	515	252	–	**767**
Electricity	159	1,366	–	**1,525**
Heat	53	412	–	**465**
Other	685	306	–	**991**
Inter-segment revenue	*204*	*802*	*(1,006)*	**–**
Total segment revenue	**11,994**	**3,138**	**(1,006)**	**14,126**
Operating expenses (excluding depreciation and loss on disposal of PPE)	(9,101)	(1,966)	933	**(10,134)**
Adjusted EBITDA	**2,893**	**1,172**	**(73)**	**3,992**
Depreciation and amortisation	(596)	(229)	3	**(822)**
(Loss)/gain on disposal of PPE	(9)	4	–	**(5)**
Impairment of non-current assets	(209)	(58)	–	**(267)**
Results from operating activities	**2,079**	**889**	**(70)**	**2,898**
Share of profits of associates and joint ventures	1,807	(5)	–	**1,802**
Gain from partial disposal of investment in associate	492	–	–	**492**
Interest expense, net	(329)	(316)	1	**(644)**
Other finance costs, net	(408)	(2)	–	**(410)**
Profit before tax	**3,641**	**566**	**(69)**	**4,138**
Income tax expense	(416)	(192)	4	**(604)**
Profit for the year	**3,225**	**374**	**(65)**	**3,534**
Additions to non-current segment assets during the year (note 11(b))	(1,342)	(382)	7	**(1,717)**

USD million	**Metals**	**Power**	**Adjustments**	**Total**
Consolidated statement of financial position				
Segment assets, excluding cash and cash equivalents and interests in associates and joint ventures	14,908	5,594	(803)	**19,699**
Investment in Metals segment	–	4,595	(4,595)	**–**
Cash and cash equivalents	1,984	346	–	**2,330**
Interests in associates and joint ventures	4,014	14	–	**4,028**
Total segment assets	**20,906**	**10,549**	**(5,398)**	**26,057**
Segment liabilities, excluding loans and borrowings and bonds payable	3,649	1,404	(218)	**4,835**
Loans, borrowings and bonds payable	6,733	4,178	–	**10,911**
Total segment liabilities	**10,382**	**5,582**	**(218)**	**15,746**
Total segment equity	10,524	4,967	(5,180)	**10,311**
Total segment equity and liabilities	**20,906**	**10,549**	**(5,398)**	**26,057**
Consolidated statement of cash flows				
Cash flows from operating activities	**1,146**	**1,022**	**–**	**2,168**
Cash flows from / (used in) investing activities	**490**	**(205)**	**–**	**285**
Acquisition of property, plant and equipment, intangible assets	(1,192)	(321)	–	**(1,513)**
Cash paid for investment in equity securities measured at fair value through profit and loss	(291)	–	–	**(291)**
Cash (paid for) / received from other investments	(50)	89	–	**39**
Dividends from associates and joint ventures	620	–	–	**620**
Interest received	37	26	–	**63**
Proceeds from partial disposal of associate	1,421	–	–	**1,421**
Other investing activities	(55)	1	–	**(54)**
Cash flows used in financing activities	**(1,891)**	**(800)**	**–**	**(2,691)**
Interest paid	(380)	(323)	–	**(703)**
Restructuring fees and expenses related to issuance of shares	(34)	(2)	–	**(36)**
Settlements of derivative financial instruments	(315)	–	–	**(315)**
Other financing activities	(1,162)	(475)	–	**(1,637)**
Net change in cash and cash equivalents	**(255)**	**17**	**–**	**(238)**

(i) Geographic information

The Group's operating segments are managed on a worldwide basis, but operate in four principal geographical areas: the CIS, Europe, Africa and the Americas. In the CIS, production facilities operate in Russia. In Europe, production facilities are located in Italy, Ireland and Sweden. African production facilities are represented by the bauxite mines and an alumina refinery in Guinea. In the Americas the Group operates one production facility in Jamaica.

The following table sets out information about the geographical location of the Group's revenue from external customers and the Group's property, plant and equipment, intangible assets, interests in associates and joint ventures and goodwill ("specified non-current assets"). The geographical location of customers is based on the location at which the services were provided or the goods delivered. The geographical location of the specified non-current assets is based on the physical location of the asset. Unallocated specified non-current assets comprise mainly goodwill and interests in associates and joint ventures.

	Year ended 31 December	
Revenue from external customers	**2022**	**2021**
	USD million	**USD million**
Russia	6,267	5,437
South Korea	1,184	314
China	1,122	772
Turkey	1,011	1,108
Japan	963	744
Netherlands	884	443
USA	647	744
Germany	441	356
Poland	385	330
Mexico	354	280
Greece	339	367
Italy	303	266
Norway	248	267
Sweden	238	209
France	223	247
Ireland	221	148
Other countries	1,719	2,094
	16,549	**14,126**

	31 December	
Specified non-current assets	**2022**	**2021**
	USD million	**USD million**
Russia	16,006	13,294
Guinea	237	232
Ireland	94	82
Sweden	53	68
Ukraine	2	6
Unallocated	3,784	3,408
	20,176	**17,090**

5. Revenues

IFRS 15 establishes a comprehensive framework for determining whether, how much and when revenue is recognised. The details of significant accounting policies in relation to the Group's various goods and services are set out below:

Sales of goods: comprise sale of primary aluminium, alloys, alumina, bauxite and other products. Customers obtain control of the goods supplied when the goods are delivered to the point when risks are transferred based on Incoterms delivery terms stated in the contract, legal title to the asset and physical possession of the asset is transferred. Invoices are generated and revenue is recognised at that point in time. Invoices are usually payable within 60 days or in advance. Under certain Group sale contracts, the final price for the goods shipped is determined a few months later than the delivery took place. Under current requirements the Group determines the amount of revenue at the moment of recognition based on estimated selling price at the date of the invoice issued. At price finalisation the difference between estimated price and actual one is recognised as other revenue.

Rendering of transportation services: as part of sales of goods the Group also performs transportation to the customer under contract terms. In certain cases, the control of goods delivered is transferred to customers prior to transportation being completed. In these cases rendering of transportation services from when the control of goods has been transferred is considered as a separate performance obligation.

Rendering of electricity supply services: The Group is involved in sales of energy to third and related parties. Invoices are issued once a month at the end of month and paid within 30 days. Revenue is recognised over time during the month of energy supply.

	Year ended 31 December	
	2022	2021
	USD million	USD million
Sales of primary aluminium and alloys	**11,384**	**9,766**
Third parties	11,164	9,445
Related parties – companies capable of exerting significant influence	211	307
Related parties – other	6	12
Related parties – associates and joint ventures	3	2
Sales of alumina and bauxite	**557**	**612**
Third parties	251	388
Related parties – associates and joint ventures	306	224
Sales of semi-finished products and foil	**921**	**767**
Third parties	921	767
Sales of electricity	**1,844**	**1,525**
Third parties	1,803	1,487
Related parties – other	2	5
Related parties – associates and joint ventures	39	33
Sales of heat	**525**	**465**
Third parties	513	444
Related parties – companies capable of exerting significant influence	3	2
Related parties – other	9	19
Other revenues	**1,318**	**991**
Third parties	1,055	818
Related parties – companies capable of exerting significant influence	21	11
Related parties – other	4	11
Related parties – associates and joint ventures	238	151
	16,549	**14,126**

All revenue of the Group relates to revenue from contracts with customers.

6. Other operating expenses, net

	Year ended 31 December	
	2022	**2021**
	USD million	**USD million**
Impairment of trade and other receivables	(169)	(65)
Charity	(53)	(55)
Loss on disposal of property, plant and equipment	(23)	(5)
Other operating expenses, net	(8)	(93)
	(253)	**(218)**

7. Personnel costs

Personnel costs comprise salaries, annual bonuses, annual leave, cost of non-monetary benefits and social contributions. Salaries, annual bonuses, paid annual leave and cost of non-monetary benefits are accrued in the year in which the associated services are rendered by employees. Where payment or settlement is deferred and the effect would be material, these amounts are stated at their present values.

The employees of the Group are also members of retirement schemes operated by local authorities. The Group is required to contribute a certain percentage of their payroll to these schemes to fund the benefits.

The Group's total contribution to those schemes charged to profit or loss during the years presented is shown below.

The Group's net obligation in respect of defined benefit pension and other post-retirement plans is calculated separately for each plan by estimating the amount of future benefit that employees have earned in return for their service in the current and prior periods. That benefit is discounted to determine its present value and the fair value of any plan assets are deducted. The discount rate is the yield at the reporting date on government bonds that have maturity dates approximating the terms of the Group's obligations. The calculation is performed using the projected unit credit method. When the calculation results in a benefit to the Group, the recognised asset is limited to the present value of any future refunds from the plan or reductions in future contributions to the plan.

Where there is a change in actuarial assumptions, the resulting actuarial gains and losses are recognised directly in other comprehensive income.

When the benefits of a plan are improved, the portion of the increased benefit relating to past service by employees is recognised in profit or loss immediately.

The Group recognises gains and losses on the curtailment or settlement of a defined benefit plan when the curtailment or settlement occurs. The gain or loss on curtailment comprises any resulting change in the fair value of plan assets, any change in the present value of the defined benefit obligation, any related actuarial gains and losses.

	Year ended 31 December	
	2022	**2021**
	USD million	**USD million**
Contributions to defined contribution retirement plans	(348)	(273)
Contributions to defined benefit retirement plans	(3)	(3)
Total retirement costs	**(351)**	**(276)**
Wages and salaries	(1,547)	(1,170)
	(1,898)	**(1,446)**

8. Finance income and costs

Finance income comprises interest income on funds invested, dividend income and foreign currency gains. Interest income is recognised as it accrues, using the effective interest method.

Finance costs comprise interest expense on borrowings, foreign currency losses and changes in the fair value of financial assets at fair value through profit or loss. All borrowing costs are recognised in profit or loss using the effective interest method, except for borrowing costs related to the acquisition, construction and production of qualifying assets which are recognised as part of the cost of such assets.

Foreign currency gains and losses are reported on a net basis. Foreign exchange loss on loans and borrowing for the year ended 31 December 2022 amounted to USD 164 million (2021: loss of USD 3 million).

	Year ended 31 December	
	2022	2021
	USD million	USD million
Finance income		
Interest income	115	65
Dividend income	38	22
Revaluation of financial assets and liabilities	31	–
	184	**87**
Finance costs		
Interest expense	(988)	(709)
Change in fair value of derivative financial instruments (note 19)	(191)	(352)
Net foreign exchange loss	(111)	(33)
Revaluation of financial assets and liabilities	–	(47)
	(1,290)	**(1,141)**

9. Earnings per share

The calculation of basic earnings per share is based on the profit attributable to ordinary equity shareholders for the years ended 31 December 2022 and 31 December 2021.

	Year ended 31 December	
	2022	2021
Weighted average number of shares	502,337,774	502,337,774
Profit for the year attributable to the shareholders of the Parent Company, USD million	1,083	2,142
Basic and diluted earnings per share, USD	**2.156**	**4.264**

There were no outstanding dilutive instruments during the years ended 31 December 2022 and 31 December 2021.

10. Income tax expense

Income tax expense comprises current and deferred tax. Income tax expense is recognised in the statement of profit or loss and other comprehensive income except to the extent that it relates to items recognised directly in equity, in which case it is recognised in equity.

Current tax is the expected tax payable on the taxable income for the year, using tax rates enacted or substantively enacted at the reporting date, and any adjustment to tax payable in respect of previous years.

Deferred tax liability is recognised in respect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. Deferred tax liability is not recognised for the following temporary differences: the initial recognition of goodwill, the initial recognition of assets or liabilities in a transaction that is not a business combination and that affects neither accounting nor taxable profit, and differences relating to investments in subsidiaries to the extent that they probably will not reverse in the foreseeable future. New information may become available that causes the Company to change its judgement regarding the adequacy of existing tax liability. Such changes to tax liabilities will impact tax expenses in the period that such a determination is made. Deferred tax is measured at the tax rates that are expected to be applied to the temporary differences when they reverse, based on the laws that have been enacted or substantively enacted by the reporting date. Deferred tax assets and liabilities are offset when they relate to income taxes levied by the same taxation authority and the Group has both the right and the intention to settle its current tax assets and liabilities on a net or simultaneous basis.

A deferred tax asset is recognised to the extent that it is probable that future taxable profits will be available against which temporary differences can be utilised. Deferred tax asset is not recognised for the following temporary differences: the initial recognition of assets or liabilities in a transaction that is not a business combination and that affects neither accounting nor taxable profit, and differences relating to investments in subsidiaries to the extent that they probably will reverse in the foreseeable future and taxable profit will be available against which the temporary difference can be utilized. Deferred tax assets are reviewed at each reporting date and are reduced to the extent that it is no longer probable that the related tax benefit will be realised.

Additional income taxes that arise from the distribution of dividends are recognised at the same time as the liability to pay the related dividends is recognised.

(a) Income tax expense

	Year ended 31 December	
	2022	2021
	USD million	USD million
Current tax expense		
Current tax for the year	(553)	(569)
Deferred tax expense		
Origination and reversal of temporary differences	(54)	(35)
	(607)	**(604)**

The Parent Company is a tax resident of the Russian SAR (special administrative region). Companies which register in the SAR as part of the continuance out of a foreign jurisdiction (such as the Parent Company) may have a number of tax benefits, subject to certain conditions.

The Parent Company and subsidiaries pay income taxes in accordance with the legislative requirements of their respective tax jurisdictions. For companies domiciled in Russia the applicable tax rate is 20%; in Ukraine is 18%; Guinea is 0%; China is 25%; Kazakhstan is 20%; Australia is 30%; Jamaica is 25%; Ireland is 12.5%, Sweden is 20.6% and Italy is 27.9%. For the Group's subsidiaries domiciled in Switzerland the applicable tax rate for the year is the corporate income tax rate in the Canton of Zug, Switzerland, which differs depending on the company's tax status. The rate consists of a federal income tax and a cantonal/communal income and capital taxes. The latter includes a base rate and a multiplier, which may change from year to year. Applicable income tax rates are 9.06% and 11.8% for Swiss subsidiaries. For the UC RUSAL's significant trading companies, the applicable tax rate is 0%. The applicable tax rates for the year ended 31 December 2021 were the same as for the year ended 31 December 2022 except for tax rates for subsidiaries domiciled in Switzerland which amounted to 9.55% and 11.85% subsequently, subsidiary domiciled in Italy which amounted to 26.9% and subsidiaries domiciled in Guinea which amounted from 0% to 30%.

Reconciliation of effective tax rate

	Year ended 31 December			
	2022		2021	
	USD million	%	USD million	%
Profit before taxation	**2,453**	**(100)**	**4,138**	**(100)**
Income tax at tax rate applicable for the Parent Company	**(491)**	**20**	**(828)**	**20**
Other non-deductible/taxable items, net	54	(2)	(57)	1
Effect of changes in investment in Norilsk Nickel	288	(12)	451	(10)
Change in unrecognised deferred tax assets	(269)	11	(99)	2
Effect of reversal of impairment / (impairment)	(18)	1	42	(1)
Effect of different income tax rates	(171)	7	(113)	3
Income tax	**(607)**	**25**	**(604)**	**15**

(b) Recognised deferred tax assets and liabilities

Deferred tax assets and liabilities are attributable to the following items:

	Assets		Liabilities		Net	
	31 December		31 December		31 December	
USD million	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**
Property, plant and equipment	118	97	(1,423)	(1,250)	**(1,305)**	**(1,153)**
Inventories	50	71	(29)	(13)	**21**	**58**
Trade and other receivables	83	61	(55)	(32)	**28**	**29**
Trade and other payables and advances received	26	23	–	–	**26**	**23**
Tax loss carry-forward	143	90	–	–	**143**	**90**
Others	120	136	(157)	(97)	**(37)**	**39**
Tax assets/(liabilities)	**540**	**478**	**(1,664)**	**(1,392)**	**(1,124)**	**(914)**
Set off of tax	(442)	(328)	442	328	**–**	**–**
Net deferred tax assets/(liabilities)	**98**	**150**	**(1,222)**	**(1,064)**	**(1,124)**	**(914)**

(c) Movement in temporary differences during the year

USD million	1 January 2022	Recognised in profit or loss	Recognised in other comprehensive income	Currency translation	31 December 2022
Property, plant and equipment	(1,153)	14	(132)	(34)	(1,305)
Inventories	58	(37)	–	–	21
Trade and other receivables	29	(1)	–	–	28
Trade and other payables and advances received	23	3	–	–	26
Tax loss carry-forwards	90	48	–	5	143
Others	39	(81)	–	5	(37)
	(914)	**(54)**	**(132)**	**(24)**	**(1,124)**

USD million	1 January 2021	Recognised in profit or loss	Currency translation	31 December 2021
Property, plant and equipment	(1,215)	50	12	(1,153)
Inventories	50	7	1	58
Trade and other receivables	16	13	–	29
Trade and other payables and advances received	29	(6)	–	23
Tax loss carry-forwards	187	(100)	3	90
Others	38	1	–	39
	(895)	**(35)**	**16**	**(914)**

Recognised tax losses expire in the following years:

Year of expiry	31 December 2022 USD million	31 December 2021 USD million
Without expiry	143	90
	143	**90**

(d) Unrecognised deferred taxes

At 31 December 2022 and 2021 the Group has not recognized deferred tax in respect to temporary differences associated with investments in subsidiaries as the Group is able to control the timing of reversal of those investments and does not intend to reverse them in the foreseeable future.

At 31 December 2022 and 2021 the Group has not recognized deferred tax in respect to temporary differences associated with investments in associates and joint ventures as both distribution of dividends and profit on sales are non-taxable.

Deferred tax assets have not been recognised in respect of the following items:

	31 December 2022 USD million	31 December 2021 USD million
Deductible temporary differences	1,040	1,009
Tax loss carry-forwards	748	510
	1,788	**1,519**

Deferred tax assets have not been recognised in respect of these items because it is not probable that future taxable profits will be available against which the Group can utilise the benefits therefrom. Tax losses expire in the following years:

Year of expiry	31 December 2022	31 December 2021
	USD million	USD million
Without expiry	745	510
From 6 to 10 years	3	–
	748	**510**

(e) Current taxation in the consolidated statement of financial position represents

	31 December 2022	31 December 2021
	USD million	USD million
Net income tax payable at the beginning of the year	44	7
Income tax for the year	553	569
Income tax paid	(599)	(529)
Translation difference	(16)	(3)
	(18)	**44**
Represented by:		
Income tax payable (note 15(d))	199	62
Income tax receivable	(217)	(18)
Net income tax payable/(receivable)	**(18)**	**44**

11. Property, plant and equipment

(a) Accounting policy

(i) Recognition and measurement

Until 1 January 2016 all items of property, plant and equipment were measured at cost less accumulated depreciation and impairment losses. The cost of property, plant and equipment at 1 January 2004, the date of transition to IFRSs, was determined by reference to its fair value at that date.

Cost includes expenditure that is directly attributable to the acquisition of the asset. The cost of self-constructed assets includes the cost of materials and direct labour, any other costs directly attributable to bringing the asset to a working condition for its intended use, the costs of dismantling and removing the items and restoring the site on which they are located and capitalised borrowing costs. Purchased software that is integral to the functionality of the related equipment is capitalised as part of that equipment.

When parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

The cost of periodic relining of electrolysers is capitalised and depreciated over the expected production period.

Gains or losses on disposal of an item of property, plant and equipment are determined by comparing the proceeds from disposal with the carrying amount of property, plant and equipment, and are recognised net within gain/(loss) on disposal of property, plant and equipment in profit or loss.

Most of the hydro assets have long useful lives (up to 100 years) and their performance does not deteriorate significantly. Considering changes in the regulation of the Russian power sector (100% liberalisation) and the fact that hydropower is one of the most efficient sectors of the electric power industry, management believes that hydropower assets were significantly undervalued prior to 1 January 2016.

On 1 January 2016 the Group identified a separate class of assets – hydro assets – and changed its accounting policy for this class from the cost to the revaluation model to provide users with more relevant information on the Group's financial position.

Hydro assets are a class of property, plant and equipment with unique nature and use in their hydropower plants. Since 1 January 2016 hydro assets are measured at a revalued amount, being their fair value at the date of the revaluation less any subsequent accumulated depreciation and subsequent accumulated impairment losses. Revaluations are made based on periodic valuation by an external independent valuer.

A class of assets may be revalued on a rolling basis provided that revaluations of the class of assets are completed within a short period and provided the revaluations are kept up to date.

After an item of property, plant and equipment is revalued, any accumulated depreciation at the date of the revaluation is eliminated against the gross carrying amount of the asset and the net amount restated to the revalued amount of the asset.

A revaluation increase on hydro assets is recognised directly under the heading of revaluation surplus in other comprehensive income. However, the increase is recognised in profit or loss to the extent that it reverses a revaluation decrease of the same asset previously recognised in profit or loss. A revaluation decrease on hydro assets is recognised in profit or loss. However, the decrease is recognised in other comprehensive income to the extent of any credit balance existing in the revaluation surplus.

(ii) Subsequent costs

The cost of replacing a part of an item of property, plant and equipment is recognised in the carrying amount of the item if it is probable that the future economic benefits embodied within the part will flow to the Group and its cost can be measured reliably. The carrying amount of the replaced part is derecognised. The costs of the day-to-day servicing of property, plant and equipment are recognised in profit or loss as incurred.

(iii) Exploration and evaluation assets

Exploration and evaluation activities involve the search for mineral resources, the determination of technical feasibility and the assessment of commercial viability of an identified resource. Exploration and evaluation activities include:

- Researching and analysing historical exploration data;
- Gathering exploration data through topographical, geochemical and geophysical studies;
- Exploratory drilling, trenching and sampling;
- Determining and examining the volume and grade of the resource;
- Surveying transportation and infrastructure requirements; and
- Conducting market and finance studies.

Administration costs that are not directly attributable to a specific exploration area are charged to profit or loss.

License costs paid in connection with a right to explore in an existing exploration area are capitalised and amortised over the term of the permit.

Exploration and evaluation expenditure is capitalised as exploration and evaluation assets when it is expected that expenditure related to an area of interest will be recouped by future exploitation, sale, or, at the reporting date, the exploration and evaluation activities have not reached a stage that permits a reasonable assessment of the existence of commercially recoverable ore reserves. Capitalised exploration and evaluation expenditure is recorded as a component of property, plant and equipment at cost less impairment losses. As the asset is not available for use, it is not depreciated. All capitalised exploration and evaluation expenditure is monitored for indications of impairment. Where there are indicators of potential impairment, an assessment is performed for each area of interest in conjunction with the group of operating assets (representing a cash-generating unit, CGU) to which the exploration is attributed. Exploration areas at which reserves have been discovered but which require major capital expenditure before production can begin are continually evaluated to ensure that commercial quantities of reserves exist or to ensure that additional exploration work is underway or planned. To the extent that capitalised expenditure is not expected to be recovered it is charged to profit or loss.

Exploration and evaluation assets are transferred to mining property, plant and equipment or intangible assets when development is sanctioned.

(iv) Stripping costs

Expenditure relating to the stripping of overburden layers of ore, including estimated site restoration costs, is included in the cost of production in the period in which it is incurred.

However, to the extent the benefit is improved access to ore, the Group recognises these costs as a non-current asset, if only: (a) it is probable that the future economic benefit (improved access to the ore body) associated with the stripping activity will flow to the entity; (b) the entity can identify the component of the ore body for which access has been improved; and (c) the costs relating to the stripping activity associated with that component can be measured reliably.

(v) Mining assets

Mining assets are recorded as construction in progress and transferred to mining property, plant and equipment when a new mine reaches commercial production.

Mining assets include expenditure incurred for acquiring mineral and development rights and developing new mining operations.

Mining assets include interest capitalised during the construction period, when financed by borrowings.

(vi) Depreciation

The carrying amounts of property, plant and equipment (including initial and any subsequent capital expenditure) are depreciated to their estimated residual value over the estimated useful lives of the specific assets concerned, or the estimated life of the associated mine or mineral lease, if shorter. Estimates of residual values and useful lives are reassessed annually and any change in estimate is taken into account in the determination of remaining depreciation charges. Leased assets are depreciated over the shorter of the lease term and their useful lives. Land is not depreciated.

Any accumulated depreciation at the date of the revaluation is eliminated against the gross amount of the assets, and the net amount is restated to the revalued amount of the asset.

The property, plant and equipment is depreciated on a straight-line or units of production basis over the respective estimated useful lives as follows:

- Hydro assets — predominantly 49 to 62 years;
- Buildings and constructions — predominantly 15 to 50 years;
- Machinery and equipment — 4 to 50 years;
- Electrolysers — 4 to 15 years;
- Mining assets — Units of production on proved and probable reserves;
- Other — 1 to 30 years.

(b) Disclosure

USD million	Land and buildings	Machinery and equipment	Electrolysers	Hydro assets	Mining assets	Construction in progress	Other	Total
Cost								
1 January 2021	**4,790**	**7,792**	**2,868**	**3,443**	**616**	**2,693**	**433**	**22,635**
Additions	250	25	143	–	62	1,236	1	**1,717**
Acquired through business combinations	8	6	–	–	–	–	1	**15**
Disposals	(60)	(95)	–	–	(5)	(26)	(6)	**(192)**
Transfers	189	520	35	37	9	(697)	(93)	**–**
Translation difference	(26)	(21)	(14)	(20)	(10)	–	3	**(88)**
At 31 December 2021	**5,151**	**8,227**	**3,032**	**3,460**	**672**	**3,206**	**339**	**24,087**
Additions	32	61	–	–	22	1,650	–	**1,765**
Acquired through business combinations	5	19	–	–	–	–	9	**33**
Disposals	(32)	(109)	(16)	–	(132)	(26)	(10)	**(325)**
Transfers	202	400	295	45	9	(978)	27	**–**
Revaluation of hydro assets as at 31 December 2022	–	–	–	464	–	–	–	**464**
Translation difference	83	90	(13)	197	11	38	12	**418**
At 31 December 2022	**5,441**	**8,688**	**3,298**	**4,166**	**582**	**3,890**	**377**	**26,442**

USD million	Land and buildings	Machinery and equipment	Electrolysers	Hydro assets	Mining assets	Construction in progress	Other	Total
Depreciation and impairment losses								
1 January 2021	**(2,674)**	**(5,800)**	**(2,536)**	**–**	**(528)**	**(1,246)**	**(274)**	**(13,058)**
Depreciation charge	(161)	(371)	(164)	(94)	(35)	–	(14)	**(839)**
(Impairment losses) / reversal of impairment	(163)	(438)	15	–	(68)	432	(26)	**(248)**
Disposals	8	80	–	–	1	4	4	**97**
Transfers	1	(31)	–	–	–	–	30	**–**
Translation difference	24	24	13	1	11	5	–	**78**
At 31 December 2021	**(2,965)**	**(6,536)**	**(2,672)**	**(93)**	**(619)**	**(805)**	**(280)**	**(13,970)**
Depreciation charge	(157)	(297)	(169)	(90)	(8)	–	(10)	**(731)**
(Impairment losses) / reversal of impairment	(42)	(150)	4	–	87	(240)	(6)	**(347)**
Disposals	16	86	12	–	10	–	8	**132**
Revaluation of hydro assets as at 31 December 2022	–	–	–	186	–	–	–	**186**
Translation difference	(34)	(47)	11	(3)	(8)	(16)	(8)	**(105)**
At 31 December 2022	**(3,182)**	**(6,944)**	**(2,814)**	**–**	**(538)**	**(1,061)**	**(296)**	**(14,835)**
Net book value								
At 1 January 2021	**2,116**	**1,992**	**332**	**3,443**	**88**	**1,447**	**159**	**9,577**
At 31 December 2021	**2,186**	**1,691**	**360**	**3,367**	**53**	**2,401**	**59**	**10,117**
At 31 December 2022	**2,259**	**1,744**	**484**	**4,166**	**44**	**2,829**	**81**	**11,607**

Depreciation expense of USD 670 million (2021: USD 778 million) has been charged to cost of goods sold, USD 7 million (2021: USD 8 million) to distribution expenses and USD 23 million (2021: USD 25 million) to administrative expenses.

Interest capitalised for the years ended 31 December 2022 and 31 December 2021 was USD 39 million and USD 9 million, respectively.

Included in construction in progress at 31 December 2022 and 31 December 2021 are advances to suppliers of property, plant and equipment of USD 164 million and USD 174 million, respectively.

(c) Impairment

Management reviewed the carrying amount of the Group's non-financial assets at the reporting date to determine whether there were any indicators of impairment or reversal of impairment.

Management identified that significant increase of aluminium prices as a result of LME appreciation indicated that for a number of Group's cash-generating units previously recognised impairment loss may require reversal. At the same time due to significant increase of oil and gas prices, fluctuations of coal sale prices and additional volumes of electricity transmission set in further periods and overall market instability impairment loss may be recognised for a number of cash-generating units. For alumina cash generating units, major influence was from unfavourable dynamics in prices of energy resources being a significant part of cash cost.

For the purposes of impairment testing, value in use of each cash generating unit was determined by discounting expected future net cash flows of the cash generating unit. Values assigned to key assumptions and estimates used to measure the units' recoverable amount was based on external sources of information and historical data. Management believes that the values assigned to the key assumptions and estimates represented the most realistic assessment of future trends.

Metals

At 31 December 2022 and 31 December 2021 management identified several indicators that a number of the Group's CGUs may be impaired or that previously recognised impairment losses may need to be reversed.

Based on results of impairment testing as at 31 December 2022, management has concluded that an impairment loss relating to property, plant and equipment of Sayanal and PGLZ in the amount of USD 85 million should be recognised in these consolidated financial statements.

Based on results of impairment testing as at 31 December 2021, management concluded that a reversal of previously recognised impairment loss relating to property, plant and equipment should be recognised in these consolidated financial statements in respect of KAZ, VgAZ, Kubal and Taishet aluminium smelters in the amount of USD 699 million. Additionally management concluded that at the same date an impairment loss relating to property, plant and equipment of Mykolaiv alumina refinery and Aughinish Alumina in the amount of USD 693 million should be recognised in these consolidated financial statements.

Assumptions used to determine the recoverable amount of the cash generating units are the same as disclosed in note 12(d). The pre-tax discount rates applied to the above mentioned cash generating units, estimated in nominal terms based on an industry weighted average cost of capital, are presented in the table below.

	Year ended 31 December	
	2022	**2021**
Taishet aluminium smelter	16.0%	11.2%
RUSAL Sayanal	14.3%	20.0%
PGLZ	14.3%	13.0%

The recoverable amounts of a number of the cash generating units tested for impairment are particularly sensitive to changes in forecast aluminium and alumina prices, foreign exchange rates and applicable discount rates.

The results of impairment testing of Taishet aluminium smelter are particularly sensitive to the following key assumptions:

- Five percent reduction in the projected aluminium price level will result in a decrease in the recoverable amount of Taishet aluminium smelter and will lead to an additional impairment in the total amount of USD 323 million;
- One percent increase in the discount rate applied will result in a decrease in the recoverable amount of Taishet aluminium smelter and will lead to an additional impairment in the total amount of USD 161 million.

Additionally, management identified specific items of property, plant and equipment that are no longer in use and therefore are not considered to be recoverable amounting to USD 99 million at 31 December 2022 (2021: USD 190 million). These assets have been impaired in full. No further impairments of property, plant and equipment or reversal of previously recorded impairment were identified.

Power

At 31 December 2022 and 2021 management identified several indicators that property, plant and equipment of the Coal CHPs (in 2022 Coal and CHPs CGUs were combined) and Irkutsk GridCo CGUs may be impaired.

Based on results of impairment testing as at 31 December 2022, management concluded that impairment losses of USD 23 million and USD 29 million regarding Irkutsk GridCo and Coal CHPs CGUs, respectively, should be recognized. Based on results of impairment testing as at 31 December 2021, management concluded that impairment losses of USD 17 million should be recognized regarding Irkutsk GridCo CGU.

The following key assumptions were used to determine the recoverable amount of the Irkutsk GridCo CGU:

	Year ended 31 December	
	2022	**2021**
Sales volumes of electricity transmission in 2023/2022	54 mln MWh	51 mln MWh
Expected growth of sales volumes till 2032/2031	11%	10%
Tariffs for electricity transmission in 2023/2022	USD 7-10 (RUB 502-726)	USD 6-9 (RUB 445-665)
Tariffs growth till 2032/2031	55%	42%
Pre-tax discount rate	15%-15.6%	15%

The anticipated price/tariffs growth included in the cash flow projections for the years from 2023 to 2032 have been based on the publicly available forecasts of Ministry of Economic Development of the Russian Federation.

The recoverable amounts estimated at 31 December 2022 and 31 December 2021 include cash flows from sales of electricity transmission to Taishet aluminium smelter.

The recoverable amount of the Irkutsk GridCo CGU is also particularly sensitive to changes in forecast electricity transmission volumes and tariffs, as well as applicable discount rates.

The following key assumptions were used to determine the recoverable amount of the Coal CHPs CGU:

	Year ended 31 December	
	2022	**2021**
Electricity sales volumes in 2023/2022	34 mln MWh	29 mln MWh
Electricity sales volumes growth till 2032/2031	0%	5%
Electricity sales prices in 2023/2022	USD 10-31 (RUB 684-2,204)	USD 7-27 (RUB 544-2,011)
Electricity sales prices growth till 2032/2031	48%-52%	37%-42%
Sales volumes of heat in 2022-2031/2023-2032	20 mln Gcal	20 mln Gcal
Heat tariffs in 2023/2022	USD 20 (RUB 1,375)	USD 16 (RUB 1,211)
Tariffs growth till 2032/2031	63%	42%
Sales volumes of coal in 2023/2022	15,846 ths tonnes	13,889 ths tonnes
Expected growth of sales volumes of coal till 2032/2031	(3)%	12%
Weighted average price for coal in 2023/2022	USD 17 (RUB 1,177)	USD 13 (RUB 930)
Weighted average price growth after 2023/2022	1%-9%	2%-4%
Pre-tax discount rate	15.7%	15.6%

The recoverable amount of Coal CHP CGU is particularly sensitive to changes in forecast electricity and coal sales prices, forecast of sales volumes as well as applicable discount rates.

Additionally, management identified specific items of property, plant and equipment that are not considered to be recoverable amounting to USD 122 million (2021: USD 41 million). No further impairment of property, plant and equipment or reversal of previously recorded impairments was identified.

(d) Security

The carrying value of property, plant and equipment pledged under the loan agreements was USD 53 million at 31 December 2022 (31 December 2021: USD 1,048 million) (note 17).

(e) Hydro assets

As disclosed in note 11(a)(i), the Group regularly performs an independent valuation of its hydro assets. As at 31 December 2022 the independent appraiser estimated the fair value of hydro assets at USD 4,166 million with an equity effect of USD 650 million and revaluation loss of USD nil million recognised in profit or loss. As at 31 December 2021 a valuation by external independent appraiser was not performed because there were no indicators showed that the fair value of hydro assets was not equal their carrying amount at that date.

The valuation analysis was primarily based on the cost approach to determine depreciated replacement cost as it is the most reliable method to estimate value for assets that do not have an active market and do not generate an identifiable revenue stream by asset. This method considers the cost to reproduce or replace the property, plant and equipment, adjusted for physical depreciation, functional and economic obsolescence.

Depreciated replacement cost was estimated based on internal sources and, where available, analysis of the Russian and international markets for similar property, plant and equipment. Various market data were collected from published information, catalogues, statistical data etc.

In addition, cash flow testing was conducted to identify if there is any economic obsolescence of the hydro assets. Forecasts of net cash flows were determined based on the actual results for the preceding years and approved budgets. Based on the analysis results as at 31 December 2022 economic obsolescence of Onda HPP was recognised and included into results of valuation analysis. As at 31 December 2021 there was no economic obsolescence.

The fair value measurement for hydro assets have been categorised as Level 3 fair values based on the inputs to the valuation techniques used.

Net book value as at 31 December 2022 according to the cost model amounted to USD 409 million (31 December 2021: USD 358 million).

(f) Leases

The Group assesses whether a contract is or contains a lease based on whether the contract conveys a right to control the use of an identified asset for a period of time in exchange for consideration. At inception or on reassessment or modification of a contract that contains a lease component, the Group allocates the consideration in the contract to each lease and non-lease component on the basis of their relative stand-alone prices. However, for the leases of properties in which Group acts as a lessee, the Group does not separate non-lease components and account for the lease and non-lease components as a single lease component.

The Group applies judgement to determine the lease term for some lease contracts in which it is a lessee that include renewal options, the assessment of whether the Group is reasonably certain to exercise such options impacts the lease term, which significantly affects the amount of lease liabilities and right-of-use assets recognised.

In determining the enforceable period (i.e. the maximum lease term), the Group considers whether both it and the lessor has a right to terminate the lease without permission from the other party and, if so, whether that termination would result in more than an insignificant penalty. If a more than insignificant penalty exists, then the enforceable period extends until the point at which a no more than an insignificant penalty exists.

The Group leases many assets, including land, properties and production equipment. The Group recognises a right-of-use asset and a lease liability at the lease commencement date. The right-of-use asset is initially measured at cost and subsequently measured at cost less any accumulated depreciation and impairment losses and adjusted for certain remeasurements of the lease liability as required by IFRS 16.

The cost comprises the initial amount of the lease liability adjusted for any lease payments made at or before the commencement date, plus any initial direct costs incurred and an estimate of costs to dismantle and remove the underlying asset or to restore the underlying asset or the site on which it is located, less any lease incentives received.

The right-of-use asset is subsequently depreciated using the straight-line method from the commencement date to the end of the lease term, unless the lease transfers ownership of the underlying asset to the Group by the end of the lease term or the cost of the right-of-use asset reflects that the Group will exercise a purchase option. In that case the right-of-use asset is depreciated over the useful life of the underlying asset, which is determined on the same basis as those of property and equipment. In addition, the right-of-use asset is periodically reduced by impairment losses, if any, and adjusted for certain remeasurements of the lease liability.

The Group presents right-of-use assets as part of property plant and equipment in the same line item as it presents underlying assets of the same nature that it owns. Additions to right-of-use assets were in the amount of USD 45 million during the year ended 31 December 2022 (31 December 2021: USD 43 million). The carrying amounts of right-of-use assets are presented below.

	Property, plant and equipment		
USD million	**Land and buildings**	**Machinery and equipment**	**Total**
Balance at 1 January 2022	36	6	**42**
Balance at 31 December 2022	**42**	**23**	**65**

Total depreciation charges related to the right-of-use assets for the year ended 31 December 2022 amount to USD 17 million (31 December 2021: USD 15 million).

USD 2 million of right-of-use assets has been impaired during the year ended 31 December 2022 (31 December 2021: USD 15 million). The Group's total cash outflow for leases was in the amount of USD 25 million for the year ended 31 December 2022 (31 December 2021: USD 26 million).

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted using the interest rate implicit in the lease or, if that rate cannot be readily determined, the Group's incremental borrowing rate. Generally, the Group uses its incremental borrowing rate as the discount rate.

In accordance with IFRS 16 variable payments which do not depend on index or rate, e.g. which do not reflect changes in market rental rates, should not be included in the measurement of lease liability. In respect of municipal or federal land leases where lease payments are based on cadastral value of the land plot and do not change until the next revision of that value or the applicable rates (or both) by the authorities, the Group has determined that, under the current revision mechanism, the land lease payments cannot be considered as either variable that depend on index or rate or in-substance fixed, and therefore these payments are not included in the measurement of the lease liability. Future cash outflows to which the Group is potentially exposed that are not recognised in right-to-use assets and are not reflected in the measurement of lease liabilities and which arise from variable lease payments not linked to index or rate are in the amount of USD 218 million as at 31 December 2022 (31 December 2021: USD 199 million).

The lease liability is subsequently increased by the interest cost on the lease liability and decreased by lease payment made. It is remeasured when there is a change in future lease payments arising from a change in an index or rate, a change in the estimate of the amount expected to be payable under a residual value guarantee, or as appropriate, changes in the assessment of whether a purchase or extension option is reasonably certain to be exercised or a termination option is reasonably certain not to be exercised.

The Group presents lease liabilities as part of other payables and other non-current liabilities in the statement of financial position depending on the period to which future lease payments relate. The total non-current part of lease liabilities as at 31 December 2022 amounted to USD 49 million (31 December 2021: USD 45 million).

Total interest costs on leases recognised for the year ended 31 December 2022 amount to USD 7 million (31 December 2021: USD 7 million).

The Group does not recognise right-of-use assets and lease liabilities for some leases of low-value assets and short-term leases. The Group recognises the lease payments associated with these leases as an expense on a straight-line basis over the lease term. The expense relating to short-term and low-value leases in the amount of USD 28 million is included in cost of sales or administrative expenses depending on type of underlying asset for the year ended 31 December 2022 (31 December 2021: USD 18 million).

When the Group is an intermediate lessor the sub-leases are classified with reference to the right-of the use asset arising from the head lease, not with reference to the underlying asset.

12. Goodwill and intangible assets

(a) Accounting policy

(i) Goodwill

On the acquisition of a subsidiary that comprises a business, the identifiable assets, liabilities and contingent liabilities of the acquired business (or interest in a business) are recognised at their fair values unless the fair values cannot be measured reliably. Where the fair values of assumed contingent liabilities cannot be measured reliably, no liability is recognised but the contingent liability is disclosed in the same manner as for other contingent liabilities.

The Group accounts for business combinations using the acquisition method when the acquired set of activities and assets meets the definition of a business and control is transferred to the Group. In determining whether a particular set of activities and assets is a business, the Group assesses whether the set of assets and activities acquired includes, at a minimum, an input and substantive process and whether the acquired set has the ability to produce outputs.

The Group has an option to apply a ‘concentration test’ that permits a simplified assessment of whether an acquired set of activities and assets is not a business. The optional concentration test is met if substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or group of similar identifiable assets. If concentration test is met the acquired set of activities and assets is not a business.

Business combinations are accounted for using the acquisition method as at the acquisition date, which is the date on which control is transferred to the Group.

Goodwill arises when the cost of acquisition exceeds the fair value of the Group’s interest in the net fair value of identifiable net assets acquired. The Group measures goodwill at the acquisition date as the fair value of the consideration transferred; plus the recognised amount of any non-controlling interests in the acquiree less the net recognised amount (generally fair value) of the identifiable assets acquired and liabilities assumed. The consideration transferred does not include amounts related to the settlement of pre-existing relationships. Such amounts are generally recognised in profit or loss. Transaction costs, other than those associated with the issue of debt or equity securities, that the Group incurs in connection with a business combination are expensed as incurred.

Goodwill is not amortised but is tested for impairment annually. For this purpose, goodwill arising on a business combination is allocated to the cash-generating units expected to benefit from the acquisition and any impairment loss recognised is not reversed even where circumstances indicate a recovery in value.

In respect of associates or joint ventures, the carrying amount of goodwill is included in the carrying amount of the interest in the associate and joint venture and the investment as a whole is tested for impairment whenever there is objective evidence of impairment. Any impairment loss is allocated to the carrying amount of the interest in the associate and joint venture.

When the fair value of the Group’s share of identifiable net assets acquired exceeds the cost of acquisition, the difference is recognised immediately in profit or loss.

(ii) Research and development

Expenditure on research activities, undertaken with the prospect of gaining new scientific or technical knowledge and understanding, is recognised in profit or loss when incurred.

Development activities involve a plan or design for the production of new or substantially improved products and processes. Development expenditure is capitalised only if development costs can be measured reliably, the product or process is technically and commercially feasible, future economic benefits are probable and the Group intends to and has sufficient resources to complete development and to use or sell the asset. The expenditure capitalised includes the cost of materials, direct labour and overhead costs that are directly attributable to preparing the asset for its intended use and capitalised borrowing costs. Other development expenditure is recognised in profit or loss when incurred.

Capitalised development expenditure is measured at cost less accumulated amortisation and accumulated impairment losses (refer to note 11(c)).

(iii) Other intangible assets

Other intangible assets that are acquired by the Group, which have finite useful lives, are measured at cost less accumulated amortisation and accumulated impairment losses (refer to note 11(c)).

(iv) Subsequent expenditure

Subsequent expenditure is capitalised only when it increases the future economic benefits embodied in the specific asset to which it relates. All other expenditure, including expenditure on internally generated goodwill and brands, is recognised in profit or loss when incurred.

(v) Amortisation

Amortisation is recognised in profit or loss on a straight-line basis over the estimated useful lives of intangible assets, other than goodwill, from the date that they are available for use. The estimated useful lives are as follows:

- Software 5 years;
- Other intangible assets 2-8 years.

The amortisation method, useful lives and residual values are reviewed at each financial year end and adjusted if appropriate.

(b) Disclosure

USD million	Goodwill	Other intangible assets	Total
Cost			
Balance at 1 January 2021	**2,485**	**605**	**3,090**
Additions	14	40	**54**
Disposals	–	(3)	**(3)**
Foreign currency translation	(8)	3	**(5)**
Balance at 31 December 2021	**2,491**	**645**	**3,136**
Additions	135	51	**186**
Disposals	–	(56)	**(56)**
Foreign currency translation	44	13	**57**
Balance at 31 December 2022	**2,670**	**653**	**3,323**
Amortisation and impairment losses			
Balance at 1 January 2021	**(450)**	**(459)**	**(909)**
Amortisation charge	–	(11)	**(11)**
Impairment	–	(14)	**(14)**
Foreign currency translation	–	(3)	**(3)**
Balance at 31 December 2021	**(450)**	**(487)**	**(937)**
Amortisation charge	–	(20)	**(20)**
Disposals	–	54	**54**
Foreign currency translation	–	(3)	**(3)**
Balance at 31 December 2022	**(450)**	**(456)**	**(906)**
Net book value			
At 1 January 2021	**2,035**	**146**	**2,181**
At 31 December 2021	**2,041**	**158**	**2,199**
At 31 December 2022	**2,220**	**197**	**2,417**

(c) Amortisation charge

The amortisation charge is included in cost of sales and administrative expenses in consolidated statement of profit or loss and other comprehensive income.

(d) Impairment testing of goodwill and other intangible assets

For the purposes of impairment testing, goodwill is allocated to following CGUs listed below. These units represent the lowest level within the Group at which the goodwill is monitored for internal management purposes.

The aggregate carrying amounts of goodwill allocated to each business, and the related impairment losses recognised, are as follows:

USD million	Allocated goodwill 2022	Accumulated impairment loss 2022	Allocated goodwill 2021	Accumulated impairment loss 2021
UC RUSAL	2,434	(449)	2,269	(449)
Angara HPPs	235	–	221	–
Other	1	(1)	1	(1)
	2,670	**(450)**	**2,491**	**(450)**

Metals

The aluminium segment represents the lowest level within UC RUSAL at which goodwill is monitored for internal management purposes. The recoverable amount represents value in use as determined by discounting the future cash flows generated from the continuing use of the plants within UC RUSAL's aluminium segment.

Similar considerations to those described above in respect of assessing the recoverable amount of property, plant and equipment apply to goodwill.

At 31 December 2022, management analysed changes in the economic environment and developments in the aluminium industry and the Group's operations since 31 December 2021 and performed an impairment test for goodwill at 31 December 2022 using the following assumptions to determine the recoverable amount of the segment:

- Total production was estimated based on average sustainable production levels of 3.8 million metric tonnes of primary aluminium, of 5.4 million metric tonnes of alumina and of 16.5 million metric tonnes of bauxite. Bauxite and alumina will be used primarily internally for production of primary aluminium;
- The aluminium and alumina prices were based on the long-term aluminium and alumina price outlook derived from available industry and market sources and were as follows:

	2023	**2024**	**2025**	**2026**	**2027**
Aluminium sales prices, based on the long-term aluminium price outlook, USD per tonne	2,422	2,512	2,588	2,606	2,571
Alumina sales prices, based on the long-term alumina price outlook, USD per tonne	324	331	341	349	360
Nominal foreign currency exchange rates, RUB per 1USD	70.5	71.9	73.3	75.4	76.9
Inflation in RUB	7.0%	7.0%	6.0%	5.0%	4.0%
Inflation in USD	4.3%	2.2%	1.9%	2.0%	2.0%

- Operating costs were projected based on the historical performance adjusted for inflation. Nominal foreign currency exchange rates applied to convert operating costs of the Group denominated in RUB into USD and inflation in RUB and USD assumed in determining recoverable amounts were as above;
- The pre-tax discount rate was estimated in nominal terms based on the weighted average cost of capital basis and was 17.5%;
- A terminal value was derived following the forecast period assuming a 2.0% annual growth rate.

Values assigned to key assumptions and estimates used to measure the units' recoverable amount were based on external sources of information and historic data. Management believes that the values assigned to the key assumptions and estimates represented the most realistic assessment of future trends. The results were particularly sensitive to the following key assumptions:

- A 5% reduction in the projected aluminium and alumina price levels would result in a decrease in the recoverable amount by 13% but would not lead to an impairment;
- A 5% increase in the projected level of electricity and alumina costs in the aluminium production would have resulted in a 6% decrease in the recoverable amount but would not lead to an impairment;
- A 1% increase in the discount rate would have resulted in a 8% decrease in the recoverable amount but would not lead to an impairment.

Based on results of impairment testing of goodwill, management concluded that no impairment should be recorded in the consolidated financial statements as at 31 December 2022.

At 31 December 2021, management analysed changes in the economic environment and developments in the aluminium industry and the Group's operations since 31 December 2020 and performed an impairment test for goodwill at 31 December 2021 using the following assumptions to determine the recoverable amount of the segment:

- Total production was estimated based on average sustainable production levels of 3.8 million metric tonnes of primary aluminium, of 8.4 million metric tonnes of alumina and of 16.7 million metric tonnes of bauxite. Bauxite and alumina will be used primarily internally for production of primary aluminium;
- The aluminium and alumina prices were based on the long-term aluminium and alumina price outlook derived from available industry and market sources and were as follows:

	2022	**2023**	**2024**	**2025**	**2026**
Aluminium sales prices, based on the long-term aluminium price outlook, USD per tonne	2,623	2,476	2,371	2,375	2,411
Alumina sales prices, based on the long-term alumina price outlook, USD per tonne	345	319	316	320	352
Nominal foreign currency exchange rates, RUB per 1 USD	72.2	74.7	76.8	79.2	80.7
Inflation in RUB	6.6%	4.5%	3.6%	4.2%	3.3%
Inflation in USD	4.0%	2.1%	2.1%	2.0%	2.1%

Operating costs were projected based on the historical performance adjusted for inflation;

- Nominal foreign currency exchange rates applied to convert operating costs of the Group denominated in RUB into USD and inflation in RUB and USD assumed in determining recoverable amounts were as above;
- The pre-tax discount rate was estimated in nominal terms based on the weighted average cost of capital basis and was 11.5%;
- A terminal value was derived following the forecast period assuming a 2.0% annual growth rate.

Values assigned to key assumptions and estimates used to measure the units' recoverable amount were based on external sources of information and historical data. Management believes that the values assigned to the key assumptions and estimates represented the most realistic assessment of future trends. The results were particularly sensitive to the following key assumptions:

- A 5% reduction in the projected aluminium and alumina price levels would result in a decrease in the recoverable amount by 18% but would not lead to an impairment;
- A 5% increase in the projected level of electricity and alumina costs in the aluminium production would have resulted in a 6% decrease in the recoverable amount but would not lead to an impairment;
- A 1% increase in the discount rate would have resulted in a 9% decrease in the recoverable amount but would not lead to an impairment.

Based on results of impairment testing of goodwill, management concluded that no impairment should be recorded in the consolidated financial statements as at 31 December 2021.

Power

Goodwill primarily resulted from the acquisition of Angara HPPs. For the purposes of impairment testing, goodwill is allocated to the Angara HPPs CGU. It represents the lowest level within the Group at which goodwill is monitored for internal management purposes.

Management performs impairment testing of goodwill annually at 31 December of the respective calendar year.

The recoverable amount of Angara HPPs in 2022 and 2021 was determined by reference to its value in use derived by discounting of the future cash flows generated from continuing use of production facilities.

The following key assumptions were used to determine the recoverable amount of the Angara HPPs cash-generating unit at 31 December 2022:

- The sales volumes were projected based on the approved budgets for 2023. In particular, the sales volumes of electricity in 2023 were planned at the level of 55 million MWh with a decline by 10% till 2032;
- Sales prices were based on the long-term price outlook derived from the available industry and market sources. The prices for electricity were estimated at the levels of USD 0.7-12.4 (RUB 49-875) per MWh depending on market segment in 2023 and increased by 48-62% respectively till 2032. Operating costs were projected based on the historical performance and the anticipated increase during the projected period was in line with inflation;
- The pre-tax discount rate was estimated in nominal terms based on the weighted average cost of capital amounted to 15.7%;
- A terminal value was derived following the forecast period assuming a 4% annual growth rate.

The following key assumptions were used to determine the recoverable amount of the Angara HPPs cash-generating unit at 31 December 2021:

- The sales volumes were projected based on the approved budgets for 2022. In particular, the sales volumes of electricity in 2022 were planned at the level of 53 million MWh with a decline by 7% till 2031;
- Sales prices were based on the long-term price outlook derived from the available industry and market sources. The prices for electricity were estimated at the levels of USD 0.6-11.9 (RUB 45-875) per MWh depending on market segment in 2022 and increased by 37-40% respectively till 2031. Operating costs were projected based on the historical performance and the anticipated increase during the projected period was in line with inflation;
- The pre-tax discount rate was estimated in nominal terms based on the weighted average cost of capital amounted to 15.6%;
- A terminal value was derived following the forecast period assuming a 4% annual growth rate.

Reasonable possible changes in key assumptions did not lead to an impairment in either 2022 or 2021.

13. Interests in associates and joint ventures

An associate is an entity in which the Group has significant influence, but not control or joint control, over its management, including participation in the financial and operating policy decisions.

A joint venture is an arrangement whereby the Group and other parties contractually agree to share control of the arrangement and have rights to the net assets of the arrangement.

An investment in an associate or a joint venture is accounted for in the consolidated financial statements under the equity method, unless it is classified as held for sale (or included in a disposal group that is classified as held for sale). Under the equity method, the investment is initially recorded at cost, adjusted for any excess of the Group's share of the acquisition-date fair values of the investee's identifiable net assets over the cost of the investment (if any). Thereafter, the investment is adjusted for the post acquisition change in the Group's share of the investee's net assets and any impairment losses relating to the investment. Any acquisition-date excess over cost, the Group's share of the post-acquisition, post-tax results of the investees and any impairment losses for the year are recognised in the consolidated statement of profit or loss and other comprehensive income within profit or loss, whereas the Group's share of the post-acquisition post-tax items of the investees' other comprehensive income is recognised in the other comprehensive income, the Group's share of the post-acquisition results recorded directly in the statement of changes in equity is recognized in the consolidated statement of changes in equity as the share of other changes in equity of associate.

When the Group's share of losses exceeds its interest in the associate or the joint venture, the Group's interest is reduced to nil and recognition of further losses is discontinued except to the extent that the Group has incurred legal or constructive obligations or made payments on behalf of the investee.

Unrealised profits and losses resulting from transactions between the Group and its associates and joint venture are eliminated to the extent of the Group's interest in the investee, except where unrealised losses provide evidence of an impairment of the asset transferred, in which case they are recognised immediately in profit or loss.

If an investment in an associate becomes an investment in a joint venture or vice versa, retained interest is not remeasured. Instead, the investment continues to be accounted for under the equity method.

In all other cases, when the Group ceases to have significant influence over an associate or joint control over a joint venture, it is accounted for as a disposal of the entire interest in that investee, with a resulting gain or loss being recognised in profit or loss. Any interest retained in that former investee at the date when significant influence or joint control is lost is recognised at fair value and this amount is regarded as the fair value on initial recognition of a financial asset.

An impairment loss in respect of an investment in an associate or joint venture is calculated as the difference between its carrying amount after application of the equity method of accounting and its recoverable amount. The recoverable amount of such investment is the greater of its value in use and its fair value less cost to sell. In determining the value in use of the investment the Group estimates: (a) its share of the present value of the estimated future cash flows expected to be generated by the investee, including the cash flows from the operations of the investee and the proceeds on the ultimate disposal of the investment; or (b) the present value of the estimated future cash flows expected to arise from the dividends to be received from the investee and from its ultimate disposal depending on which available information with respect to each investee is more reliable. An impairment loss is reversed to the extent that the recoverable amount of the investment subsequently increases and the resulting carrying amount does not exceed the carrying amount that would have been determined, after application of the equity method, had no impairment loss previously been recognised.

	31 December	
	2022	2021
	USD million	USD million
Balance at the beginning of the year	**4,028**	**3,832**
Group's share of profits and impairment	1,553	1,802
Group's share of equity transactions	–	129
Acquisition and contribution to investments	8	9
Partial disposal of investment in associate	–	(313)
Dividends	(764)	(1,452)
Foreign currency translation	369	21
Balance at the end of the year	**5,194**	**4,028**
Goodwill included in interests in associates	2,404	2,300

The following list contains only the particulars of associates, all of which are corporate entities, which principally affected the results or assets of the Group.

			Proportion of ownership interest		
Name of associate / joint venture	**Place of incorporation and operation**	**Particulars of issued and paid up capital**	**Group's effective interest***	**Group's nominal interest**	**Principal activity**
PJSC MMC Norilsk Nickel	Russian Federation	153,654,624 shares, RUB 1 par value	15.01%	26.39%	Nickel and other metals production
Queensland Alumina Limited	Australia	2,212,000 shares, AUD 2 par value	11.38%	20%	Production of alumina under a tolling agreement
BEMO project	Cyprus, Russian Federation	BOGES Limited and BALP Limited – 10,000 shares EUR 1.71 each	28.44%	50%	Power / Aluminium production

* Interest attributable to the shareholders of the Parent Company.

The summary of the consolidated financial statements of associates and joint ventures for the year ended 31 December 2022 is presented below:

	PJSC MMC Norilsk Nickel		Queensland Alumina Limited		BEMO project		Other associates and joint ventures	
	Group share	100%	Group share	100%	Group share	100%	Group share	100%
	USD million	USD million	USD million	USD million	USD million	USD million	USD million	USD million
Non-current assets	6,614	17,392	182	1,053	1,367	2,559	244	593
Current assets	2,218	8,403	27	163	201	391	121	265
Non-current liabilities	(2,517)	(9,539)	(92)	(495)	(808)	(1,616)	(110)	(220)
Current liabilities	(2,029)	(7,689)	(117)	(653)	(33)	(66)	(74)	(133)
Net assets	**4,286**	**8,567**	**–**	**68**	**727**	**1,268**	**181**	**505**

	PJSC MMC Norilsk Nickel		Queensland Alumina Limited		BEMO project		Other associates and joint ventures	
	Group share	100%	Group share	100%	Group share	100%	Group share	100%
	USD million	USD million	USD million	USD million	USD million	USD million	USD million	USD million
Revenue	4,454	16,876	110	550	678	1,356	285	821
Profit/(loss) and impairment from continuing operations	1,440	5,854	–	(20)	102	210	11	51
Other comprehensive income/(loss)	336	920	–	(25)	29	56	4	11
Total comprehensive income/(loss)	**1,776**	**6,774**	**–**	**(45)**	**131**	**266**	**15**	**62**

The summary of the consolidated financial statements of associates and joint ventures for the year ended 31 December 2021 is presented below:

	PJSC MMC Norilsk Nickel		Queensland Alumina Limited		BEMO project		Other associates and joint ventures	
	Group share	100%	Group share	100%	Group share	100%	Group share	100%
	USD million	USD million	USD million	USD million	USD million	USD million	USD million	USD million
Non-current assets	5,590	13,565	185	933	1,362	2,548	234	562
Current assets	2,605	9,870	34	176	152	293	85	198
Non-current liabilities	(2,788)	(10,564)	(103)	(448)	(862)	(1,724)	(91)	(182)
Current liabilities	(2,133)	(8,083)	(116)	(580)	(57)	(115)	(69)	(143)
Net assets	**3,274**	**4,788**	**–**	**81**	**595**	**1,002**	**159**	**435**

	PJSC MMC Norilsk Nickel		Queensland Alumina Limited		BEMO project		Other associates and joint ventures	
	Group share	100%	Group share	100%	Group share	100%	Group share	100%
	USD million	USD million	USD million	USD million	USD million	USD million	USD million	USD million
Revenue	4,711	17,852	111	555	487	974	260	761
Profit/(loss) and impairment from continuing operations	1,762	6,974	–	(30)	58	97	(18)	68
Other comprehensive income/(loss)	24	98	–	(5)	(3)	(7)	–	(3)
Total comprehensive income/(loss)	**1,786**	**7,072**	**–**	**(35)**	**55**	**90**	**(18)**	**65**

(a) PJSC MMC Norilsk Nickel

In 2021 the Group has participated in the repurchase of Norilsk Nickel shares to raise additional funds to finance its own investment programme. The Group sold 3,691,465 shares for RUB 27,780 per share, with the aggregate consideration of USD 1,418 million. The carrying value of the shares sold amounted to USD 313 million, and USD 613 million of currency translation reserve attributed to the shares sold was reclassified to profit/(loss) for the period, resulting in net gain of USD 492 million recognised in the consolidated statement of profit or loss and other comprehensive income. The effective interest in Norilsk Nickel held by the Metals segment after the transaction comprised 26.39%, the average effective interest for the year 2021 was 27.11%.

The Group's investment in Norilsk Nickel is accounted for using equity method and the carrying value as at 31 December 2022 and 31 December 2021 amounted USD 4,286 million and USD 3,274 million, respectively. The Group's share of profit of Norilsk Nickel was USD 1,440 million, the foreign currency translation gain was USD 336 million for the year ended 31 December 2022.

As at 31 December 2020 Group's associate PJSC MMC Norilsk Nickel recognized a liability on the execution of a put option held by owners of 13.3% non-controlling interest in the share capital in LLC "GRK "Bystrinskoye" in the amount of USD 428 million. Since the non-controlling interest owners did not exercise their right under the put option before its expiry date of 31 December 2021, PJSC MMC Norilsk Nickel derecognised the liability on the execution of the put option as at 31 December 2021. PJSC MMC Norilsk Nickel recorded derecognition of the liability directly in the consolidated statement of changes in equity as Other effects related to transactions with non-controlling interest owners in the amount of USD 490 million, which was its fair value at 31 December 2021 immediately before derecognition. The Group recognized its share of this change of interest in the net assets of the associate directly in the consolidated statement of changes in equity as Share of other effects of associate recognized in the equity in the amount USD 129 million.

The fair value of the investment amounted USD 8,775 million and USD 12,395 million as at 31 December 2022 and 31 December 2021, respectively, and is determined by multiplying the quoted bid price per share on the Moscow Exchange on the year-end date by the number of shares held by the Group.

(b) Queensland Alumina Limited

The carrying value of the Group's investment in Queensland Alumina Limited as at both 31 December 2022 and 31 December 2021 amounted to USD nil million. At 31 December 2022 management has not identified any impairment reversal indicators relating to the Group's investment in QAL and as a result no detailed impairment testing was performed in relation to this investment.

(c) BEMO project

The carrying value of the Group's investment in BEMO project as at 31 December 2022 and 31 December 2021 amounted USD 727 million and USD 595 million, respectively.

For the purposes of impairment testing, the BEMO project was separated into two cash generating units – the Boguchansky Aluminium Smelter ("BoAZ') and the Boguchansky Hydro Power Plant ("BoGES"). The recoverable amount was determined by discounting the expected future net cash flows of each cash generating unit.

At 31 December 2022 management has not identified any impairment indicators relating to the Group's investment in BoGES as well as any impairment reversal indicators relating to investments in BoAZ and as a result no detailed impairment testing was performed in relation to this investment.

At 31 December 2022, accumulated losses of USD 73 million (2021: USD 51 million) at BoAZ have not been recognised because the Group's investment has already been fully written down to USD nil million.

Additional financial information of the Group's effective interest in BEMO project for the year ended 31 December 2022 and 31 December 2021 is presented below:

	31 December 2022	**31 December 2021**
	USD million	**USD million**
Cash and cash equivalents	78	32
Current financial liabilities	(1)	(25)
Non-current financial liabilities	(633)	(770)
Depreciation and amortisation	(66)	(53)
Interest income	3	1
Interest expense	(6)	(13)
Income tax expense	(25)	(14)

14. Inventories

Inventories are measured at the lower of cost and net realisable value.

The cost of inventories is determined under the weighted average cost method, and includes expenditure incurred in acquiring the inventories, production or conversion costs and other costs incurred in bringing them to their existing location and condition. In the case of manufactured inventories and work in progress, cost includes an appropriate share of production overheads based on normal operating capacity.

Net realisable value is the estimated selling price in the ordinary course of business, less the estimated cost of completion and selling expenses.

Production costs include mining and concentrating costs, smelting, treatment and refining costs, other cash costs and depreciation and amortisation of operating assets.

	31 December	
	2022	**2021**
	USD million	**USD million**
Raw materials and consumables	1,634	1,499
Work in progress	887	769
Finished goods and goods for resale	1,862	1,463
	4,383	**3,731**

Inventories at 31 December 2022 and 31 December 2021 are stated at net realisable value.

Inventories with a carrying value of USD nil million and USD 781 million were pledged as collateral for secured bank loans at 31 December 2022 and 31 December 2021, respectively (note 17).

15. Non-derivative financial instruments

Non-derivative financial instruments comprise investments in securities, trade and other receivables (excluding prepayments and tax assets), cash and cash equivalents, loans and borrowings and trade and other payables (excluding advances received and tax liabilities).

Non-derivative financial instruments, except for trade and other receivables, are recognised initially at fair value plus any directly attributable transaction costs. Trade and other receivables are recognised at transaction price.

A financial instrument is recognised when the Group becomes a party to the contractual provisions of the instrument. Financial assets are derecognised if the Group's contractual rights to the cash flows from the financial assets expire or if the Group transfers the financial asset to another party without retaining control or substantially all risks and rewards of the asset. Financial liabilities are derecognised if the Group's obligations specified in the contract expire or are discharged or cancelled.

IFRS 9 *Financial Instruments* sets out requirements for recognising and measuring financial assets, financial liabilities and some contracts to buy or sell non-financial items. The details of significant accounting policies are set out below.

Classification and measurement of financial assets and financial liabilities

IFRS 9 specifies three principal classification categories for financial assets: measured at amortised cost, fair value through other comprehensive income (“FVOCI”) and fair value through profit or loss (“FVTPL”). The classification of financial assets under IFRS 9 is generally based on the business model in which a financial asset is managed and its contractual cash flow characteristics. Under IFRS 9, derivatives embedded in contracts where the host is a financial asset in the scope of the standard are never bifurcated. Instead, the hybrid financial instrument as a whole is assessed for classification.

The Group’s financial assets mostly fall within the category of financial assets measured at amortised cost. The only exception is derivative financial assets measured at fair value through profit or loss and cash flow hedges accounted through other comprehensive income (note 19) and other investments measured at fair value through profit or loss (note 15(g)). The Group’s financial liabilities fall within category of financial liabilities measured at amortised cost

(a) Impairment of trade receivables

Under IFRS 9, loss allowances (expected credit losses – “ECL”) are measured on either of the following bases:

- 12-month ECLs: these are ECLs that result from possible default events within the 12 months after the reporting date; and
- lifetime ECLs: these are ECLs that result from all possible default events over the expected life of a financial instrument.

The Group measures loss allowances at an amount equal to lifetime ECLs, except for bank balances for which credit risk (i.e. the risk of default occurring over the expected life of the financial instrument) has not increased significantly since initial recognition. The Group measures loss allowances for trade receivables at an amount equal to lifetime ECLs.

When determining whether the credit risk of a financial asset has increased significantly since initial recognition and when estimating ECLs, the Group considers reasonable and supportable information that is relevant and available without undue cost or effort. This includes both quantitative and qualitative information and analysis, based on the Group’s historical experience and informed credit assessment and including forward-looking information.

The Group assumes that the credit risk on a financial asset has increased significantly if it is more than 30 days past due.

The Group considers a financial asset to be in default when:

- The borrower is unlikely to pay its credit obligations to the Group in full, without recourse by the Group to actions such as realising security (if any is held); or
- The financial asset is more than 90 days past due, but additional analysis is conducted for each such receivable and assessment is updated accordingly.

The maximum period considered when estimating ECLs is the maximum contractual period over which the Group is exposed to credit risk.

ECLs are a probability-weighted estimate of credit losses. Credit losses are measured as the present value of all cash shortfalls (i.e. the difference between the cash flows due to the entity in accordance with the contract and the cash flows that the Group expects to receive). ECLs are discounted at the effective interest rate of the financial asset in case of long-term assets.

At each reporting date, the Group assesses whether financial assets carried at amortised cost are credit-impaired. A financial asset is ‘credit-impaired’ when one or more events that have a detrimental impact on the estimated future cash flows of the financial asset have occurred.

Loss allowances for financial assets measured at amortised cost are deducted from the gross carrying amount of the assets. Impairment losses related to trade and other receivables are presented as part of net other operating expenses.

The following analysis provides further detail about the calculation of ECLs related to trade receivables. The Group uses an allowance matrix to measure the ECLs of trade receivables from the customers. Loss rates are calculated using a 'roll rate' method based on the probability of a receivable progressing through successive stages of delinquency to write-off. The ECLs were calculated based on actual credit loss experience over the past two years. The Group performed the calculation of ECL rates separately for the customers of each key trading company of the Group. Exposures within each trading company were not further segmented except for individually significant customers which bear specific credit risk depending on the repayment history of the customer and relationship with the Group.

Metals

The following table provides information about determined ECLs rates for trade receivables both as at 1 January 2022 and 31 December 2022.

	Weighted-average loss rate		
	31 December 2022	**1 January 2022**	**Credit-impaired**
Current (not past due)	1%	1%	No
1-30 days past due	10%	18%	No
31-60 days past due	50%	45%	No
61-90 days past due	48%	52%	No
More than 90 days past due	38%	63%	Yes

Power

The following table provides information about determined ECLs rates for trade receivables both as at 1 January 2022 and 31 December 2022.

	Weighted-average loss rate		
	31 December 2022	**1 January 2022**	**Credit-impaired**
Current (not past due)	1%	1%	No
1-90 days past due	1%	1%	No
90-180 days past due	30%	30%	No
More than 180 days past due	100%	100%	Yes

Fluctuations reflect differences between economic conditions during the period over which the historical data has been collected, current conditions and the Group's view of economic conditions over the expected lives of the receivables.

Impairment losses in respect of trade receivables are recorded using an allowance account unless the Group is satisfied that recovery of the amount is remote, in which case the impairment loss is written off against trade receivables directly.

As 31 December 2022 the Group presented non-derivative financial and non-financial assets and liabilities separately. Balances for 31 December 2021 were represented respectively for comparative purposes.

(b) Trade and other receivables

	31 December	
	2022	**2021**
	USD million	**USD million**
Trade receivables from third parties	**1,295**	**949**
Trade receivables from related parties, including	**50**	**126**
Related parties – companies capable of exerting significant influence	*45*	*105*
Related parties – other	–	*2*
Related parties – associates and joint ventures	*5*	*19*
Other receivables from third parties	**235**	**171**
Dividends receivable from related parties	**–**	**827**
Related parties – associates and joint ventures	–	*827*
	1,580	**2,073**
Impairment of receivables	(103)	(104)
	1,477	**1,969**

(i) Ageing analysis

Included in trade and other receivables are trade receivables (net of allowance for doubtful debts) with the following ageing analysis as of the statement of financial position dates:

Metals

	31 December	
	2022	**2021**
	USD million	**USD million**
Current	**842**	**833**
Past due 1-30 days	122	16
Past due 31-60 days	42	–
Past due 61-90 days	1	1
Past due over 90 days	31	11
Amounts past due	**196**	**28**
	1,038	**861**

Power

	31 December	
	2022	**2021**
	USD million	**USD million**
Current	**197**	**160**
Past due 1-30 days	12	11
Past due 31-60 days	6	6
Past due 61-90 days	4	4
Past due 91-180 days	8	7
Past due over 180 days	1	3
Amounts past due	**31**	**31**
	228	**191**

Trade receivables are on average due within 60 days from the date of billing. The receivables that are neither past due nor impaired (i.e. current) relate to a wide range of customers for whom there was no recent history of default.

Further details of the Group’s credit policy are set out in note 20(e).

(c) Prepayments and VAT recoverable

	31 December	
	2022	2021
	USD million	USD million
VAT recoverable	**552**	**419**
Advances paid to third parties	**311**	**137**
Advances paid to related parties, including	**88**	**109**
Related parties – associates and joint ventures	*88*	*109*
Other taxes receivable	**18**	**19**
Other current assets	**7**	**9**
	976	**693**
Impairment of prepayments and VAT recoverable	(156)	(25)
	820	**668**

(d) Trade and other payables

	31 December	
	2022	2021
	USD million	USD million
Accounts payable to third parties	**1,047**	**896**
Accounts payable to related parties, including	**115**	**103**
Related parties – companies capable of exerting significant influence	*6*	*6*
Related parties – associates and joint ventures	*109*	*97*
Other payables and accrued liabilities	**326**	**267**
Income tax payable	**199**	**62**
	1,687	**1,328**

All of the trade and other payables are expected to be settled within one year or are repayable on demand.

(e) Advances received

	31 December	
	2022	2021
	USD million	USD million
Advances received from third parties	**296**	**1,163**
Advances received from related parties, including	**13**	**–**
Related parties – associates and joint ventures	*13*	*–*
	309	**1,163**

Advances received represent contract liabilities to perform obligations under contracts with customers. Advances received are short-term and revenue in respect of the contract liabilities recognized as at the reporting date is fully recognized during next twelve months.

(f) Cash and cash equivalents

	31 December	
	2022	2021
	USD million	USD million
Bank balances, USD	120	549
Bank balances, RUB	1,544	402
Bank balances, EUR	81	85
Bank balances, other currencies	134	75
Cash in transit	17	
Short-term bank deposits	1,548	1,213
Other cash equivalents	30	4
Cash and cash equivalents in the consolidated statement of cash flows	**3,474**	**2,328**
Restricted cash	3	2
Cash and cash equivalents in the consolidated statement of financial position	**3,477**	**2,330**

As at 31 December 2022 and 31 December 2021 included in cash and cash equivalents was restricted cash of USD 3 million and USD 2 million, respectively.

(g) Other non-current assets

	31 December 2022 USD million	31 December 2021 USD million
Long-term deposits	125	139
Prepayment for subsidiary acquisition	–	73
Other non-current assets	186	46
	311	**258**

(h) Investments in equity securities measured at fair value through profit and loss

During the year 2022 Metals segment continued to acquire equity securities of RusHydro, 10,893,422,000 shares were bought for a total consideration of USD 113 million. As at 31 December 2022 the Group owns circa 9.75% of RusHydro shares. Investment is treated as equity securities measured at fair value through profit and loss.

Fair value is estimated in accordance with Level 1 of the fair value hierarchy. The market value was determined by multiplying the quoted bid price per share on the Moscow Exchange on reporting date by the number of shares held by the Group.

16. Equity

(a) Share capital, additional paid-in capital and transactions with shareholders

As at 31 December 2022 the Parent Company's share capital is divided into 638,848,896 ordinary shares with a nominal value of USD 0.00007 each. The Parent Company may also issue 75,436,818.286 ordinary shares.

As at 31 December 2022 and 31 December 2021 all issued ordinary shares were fully paid.

Change in effective interest in subsidiaries

Following consolidation of more than 95% of Irkutskenergo shares, in January 2022 the Group submitted a buyout notice. As at 31 December 2022 the effective and nominal interest in Irkutskenergo held by the Group is 100.00%. Total consideration paid to non-controlling shareholders during the reporting period amounted to USD 14 million.

In 2021, through certain transactions, the Group increased its effective interest in Irkutskenergo from 93.2% to 98.03% for USD 44 million.

(b) Treasury share reserve

When shares recognised as equity are repurchased, the amount of the consideration paid, which includes directly attributable costs, net of any tax effects, is recognised as a deduction from equity. Repurchased shares are classified as treasury shares and are presented in the treasury share reserve. When treasury shares are sold or reissued subsequently, the amount received is recognised as an increase in equity, and the resulting surplus or deficit on the transaction is presented in additional paid-in capital.

The reserve for the Group's treasury shares comprises the cost of the Parent Company's shares held by the Group. As at 31 December 2022 and 31 December 2021 the Group held 136,511,122 of its own shares.

(c) Currency translation reserve

The currency translation reserve comprises all foreign exchange differences arising from the translation of the consolidated financial statements of foreign subsidiaries, associates and joint ventures. The reserve is dealt with in accordance with the accounting policies set out in note 3(b).

(d) Other reserves

Other reserves include the cumulative unrealised actuarial gains and losses on the Group's defined post-retirement benefit plans, the effective portion of the accumulated net change in fair value of cash flow hedges, the Group's share of other comprehensive income of associates and cumulative unrealised gains and losses on Group's financial assets which have been recognised directly in other comprehensive income.

(e) Dividends

During the years ended 31 December 2022 and 31 December 2021 the Parent Company did not declare and pay dividends.

In 2022 Metals segment declared dividends. In November 2022 dividends of USD 131 million were paid to Group's non-controlling shareholders.

The Parent Company may distribute dividends from retained earnings and profit for the reporting period in compliance with the current legislation of the Russian Federation and the provisions of its Charter.

(f) Revaluation reserve

The revaluation reserve comprises the cumulative net change in the fair value of hydro assets at the reporting date and is dealt with in accordance with the accounting policies set out in note 11(a)(i).

An independent valuation analysis of hydro assets was carried out as at 31 December 2022, the fair value of hydro assets was estimated at USD 4,166 million (note 11(e)). As a result of this fair value valuation, the Group recognised an additional revaluation reserve in the amount of USD 518 million net of tax.

(g) Non-controlling interests

The following table summarises the information relating to each of the Group's subsidiaries that has material non-controlling interest:

31 December 2022

USD million	UC RUSAL	OJSC Irkutsk Electric Grid Company	Total
NCI percentage	**43.1%**	**46.2%**	
Assets	24,147	544	
Liabilities	(12,324)	(205)	
Net assets	**11,823**	**339**	
Carrying amount of NCI	5,098	154	**5,252**
Revenue	13,974	407	
Profit/(loss)	1,793	(39)	
Other comprehensive income	294	–	
Total comprehensive (loss)/income	**2,087**	**(39)**	
Profit/(loss) attributable to NCI	777	(14)	**763**
Other comprehensive income attributable to NCI	127	7	**134**
Cash flows (used in) / from operating activities	(412)	39	
Cash flows from / (used in) investing activities	472	(48)	
Cash flows from financing activities	1,415	6	
Net increase/(decrease) in cash and cash equivalents	**1,475**	**(3)**	

31 December 2021

USD million	UC RUSAL	Irkutsk-energo	OJSC Irkutsk Electric Grid Company	Total
NCI percentage	**43.1%**	**1.97%**	**46.6%**	
Assets	20,422	5,772	534	
Liabilities	(10,382)	(3,462)	(175)	
Net assets	**10,040**	**2,310**	**359**	
Carrying amount of NCI	4,329	46	161	**4,536**
Revenue	11,994	1,790	345	
Profit/(loss)	3,225	17	(9)	
Other comprehensive income	627	172	–	
Total comprehensive income/(loss)	**3,852**	**189**	**(9)**	
Profit/(loss) attributable to NCI	1,391	4	(3)	**1,392**
Other comprehensive income attributable to NCI	269	12	–	**281**
Cash flows from operating activities	1,146	398	36	
Cash flows from / (used in) investing activities	490	(409)	(60)	
Cash flows (used in) / from financing activities	(1,891)	79	26	
Net (decrease)/increase in cash and cash equivalents	**(255)**	**68**	**2**	

17. Loans and borrowings

This note provides information about the contractual terms of the Group's loans and borrowings. For more information about the Group's exposure to interest rate and foreign currency risk refer to notes 20(c)(ii) and 20(c)(iii), respectively.

	31 December	
	2022	2021
	USD million	USD million
Non-current liabilities		
Secured bank loans	5,333	6,291
Unsecured bank loans	858	567
Bonds	3,511	1,316
	9,702	**8,174**

	31 December	
	2022	2021
	USD million	USD million
Current liabilities		
Current portion of secured bank loans	928	675
Current portion of unsecured bank loans	9	5
	937	**680**
Secured bank loans	284	–
Unsecured bank loans	1,251	871
Accrued interest	78	68
Bonds	1,348	1,118
	2,961	**2,057**
	3,898	**2,737**

(a) Loans and borrowings

	31 December	
	2022	**2021**
	USD million	**USD million**
Non-current liabilities		
Secured bank loans		
Variable		
USD – 3M Libor + 1.7%	25	125
USD – 3M Libor + 2.1%	359	718
USD – 3M Libor + 3.0%	2,100	2,098
RUB – CBR + 1.50-2.00%	2,690	3,041
RUB – CBR + 3.15%	137	309
Fixed		
RUB – fixed at 3.0%	22	–
	5,333	**6,291**
Unsecured bank loans		
Variable		
RUB – CBR + 1.15-2.00%	37	534
EUR – 6M Euribor + 0.45-0.67%	34	33
Fixed		
CNY – fixed at 3.75%	777	–
RUB – fixed at 3.0%	10	–
	858	**567**
Bonds	3,511	1,316
	9,702	**8,174**
Current liabilities		
Current portion of secured bank loans		
Variable		
USD – 3M Libor + 1.7%	100	75
USD – 3M Libor + 2.1%	359	268
RUB – CBR + 1.5-2.00%	465	332
RUB – CBR + 3.15%	3	–
Fixed		
RUB – fixed at 3.0%	1	–
	928	**675**
Current portion of unsecured bank loans		
Variable		
EUR – 6M Euribor + 0.45-0.67%	6	5
Fixed		
RUB – other	3	–
	9	**5**
Secured bank loans		
Fixed		
RUB – fixed at 11.0%	284	–
	284	**–**
Unsecured bank loans		
Variable		
RUB – CBR + 1.1-2.5%	876	481
Fixed		
USD – fixed at 2.15-2.25%	–	375
CNY – fixed at 4.2%	375	–
RUB – fixed at 5.75-10.5%	–	15
	1,251	**871**
Accrued interest	78	68
Bonds	1,348	1,118
	2,961	**2,057**
	3,898	**2,737**

The bank loans are secured as at 31 December 2022 and 31 December 2021 by the following:

- Rights, including all monies and claims, arising out of certain sales contracts between the Group's trading subsidiaries and its ultimate customers, were assigned to secure the syndicated Pre-Export Finance Term Facility Agreement (PXF) dated 28 January 2021;
- Properties, plant and equipment – refer to note 11(d);
- Inventories – refer to note 14;
- Shares of the Group companies as described below.

Metals

On 28 January 2021, the Metals segment entered into a new three-year sustainability-linked pre-export finance facility for up to USD 200 million. The interest rate is subject to a sustainability discount or premium depending on UC RUSAL's fulfilment of the sustainability key performance indicators (KPIs). The proceeds were used to refinance the principal outstanding under the existing debt.

The nominal value of UC RUSAL's loans and borrowings was USD 4,883 million at 31 December 2022 (31 December 2021: USD 4,266 million).

As at 31 December 2022 and 31 December 2021 the secured bank loans are secured by certain pledges of shares of a number of UC RUSAL's subsidiaries and 25% +1 share of Norilsk Nickel (Group's associate).

Power

The nominal value of Power loans and borrowings was USD 3,881 million at 31 December 2022 (31 December 2021: USD 4,182 million).

As at 31 December 2022 and 31 December 2021 the secured bank loans are secured by certain pledges of shares of a number of Parent Company's subsidiaries, including LLC ESE–Hydrogeneration – 100% (2021: 100%), JSC Krasnoyarsk Hydro-Power Plant – 100% (2021: 100%), PJSC Irkutskenergo – 77.42% (2021: 73.18%) and JSC EuroSibEnergo – 50% + 1 share (2021: 50% + 1 share). Additionally as at 31 December 2022 and 31 December 2021 21.37% shares of the Parent Company were pledged.

(b) Bonds

As at 31 December 2022, the Group had outstanding (traded in the market) bonds denominated in RUB, Chinese yuan and eurobonds denominated in USD:

Type	Series	The number of bonds traded in the market	Nominal value, USD million	Nominal interest rate	Put-option date	Maturity date
Bond	BO-01	30,263	–	0.01%	–	07.04.2026
Bond	BO-001P-01	3,490,970	49	9.50%	25.10.2023	16.04.2029
Bond	BO-001P-02	15,000,000	213	8.60%	25.01.2023	28.06.2029
Bond	BO-002P-01	10,000,000	142	6.50%	09.06.2023	28.05.2030
Eurobond	–	458,785	459	5.3%	–	03.05.2023
Eurobond	–	484,712	485	4.85%	–	01.02.2023
Bond	BO-05	2,000,000	281	3.90%	05.08.2024	28.07.2027
Bond	BO-06	2,000,000	281	3.90%	05.08.2024	28.07.2027
Bond	BO-001P-01	6,000,000	844	3.75%	–	24.04.2025
Bond	BO-001P-02	1,000,000	141	3.95%	–	23.12.2025
Bond	BO-001P-03	3,000,000	422	LPR1Y + 0.2%	–	24.12.2025
Bond	001PC-01	2,379,660	335	3.75%	–	07.03.2025
Bond	001PC-02	2,352,869	331	3.75%	–	07.03.2025
Bond	001PC-03	2,367,763	333	3.75%	–	07.03.2025
Bond	001PC-04	1,778,060	251	3.75%	–	07.03.2025
Bond	001PC-01	2,075,377	292	4.45%	–	22.12.2025

On 3 August 2022 Metals segment placed its exchange-traded non-convertible interest-bearing yuan bonds series BO-05, BO-06 in the total amount of CNY 4 billion with a coupon rate fixed at 3.9% p.a. on the Moscow Exchange. Maturity of the bonds is five years, with the put-option in 2 years.

On 27 October 2022 Metals segment placed its exchange-traded non-convertible interest-bearing yuan bonds series BO-001P-01 in the amount of CNY 6 billion with a coupon rate fixed at 3.75% p.a. on the Moscow Exchange. Maturity of the bonds is 2.5 years.

On 27 December 2022 Metals segment placed its exchange-traded non-convertible interest-bearing yuan bonds series BO-001P-02 in the amount of CNY 1 billion with a coupon rate fixed at 3.95% p.a. on the Moscow Exchange. Maturity of the bonds is 3 years.

On 28 December 2022 Metals segment placed its exchange-traded non-convertible interest-bearing yuan bonds series BO-001P-03 in the amount of CNY 3 billion with the floating rate linked to LPR 1Y + 0.2% on the Moscow Exchange. The interest rate for the first coupon period was set at 3.85% p.a. Maturity of the bonds is 3 years.

In November 2022 Metals segment placed its commercial non-convertible interest-bearing yuan bonds series 001PC-01, 001PC-02, 001PC-03, 001PC-04 in the total amount CNY 8,878,352,000 with a coupon rate fixed at 3.75% p.a. Maturity of the bonds is March 2025.

In December 2022 Power segment placed its commercial non-convertible interest-bearing yuan bonds series 001PC-01 in the total amount CNY 2,075,377,000 with a coupon rate fixed at 4.45% p.a. Maturity of the bonds is December 2025.

On 8 September 2022 the exchange-traded non-convertible interest-bearing RUB denominated bonds of RUSAL Bratsk series BO-001P-03 were fully repaid.

On 10 November 2022 the exchange-traded non-convertible interest-bearing RUB denominated bonds of RUSAL Bratsk series BO-001P-04 were fully repaid.

As at 31 December 2022, the amount of accrued interest on these bonds was USD 48 million (31 December 2021: USD 44 million).

The total foreign exchange gain on bonds for the year ended 31 December 2022 accounted in other comprehensive loss as part of the cash flow hedge result amounted to USD 96 million (USD 4 million income for the year ended 31 December 2021).

18. Provisions

(a) Accounting policy

A provision is recognised if, as a result of a past event, the Group has a present legal or constructive obligation that can be estimated reliably, and it is probable that an outflow of economic benefits will be required to settle the obligation. Provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability. The unwinding of the discount is recognised as finance costs.

(i) Site restoration

The mining, refining and smelting activities of the Group can give rise to obligations for site restoration and rehabilitation. Restoration and rehabilitation works can include facility decommissioning and dismantling, removal or treatment of waste materials, land rehabilitation, and site restoration. The extent of work required and the associated costs are dependent on the requirements of law and the interpretations of the relevant authorities.

Provisions for the cost of each restoration and rehabilitation program are recognised at the time that environmental disturbance occurs. When the extent of disturbance increases over the life of an operation, the provision is increased accordingly. Costs included in the provision encompass obligated and reasonably estimable restoration and rehabilitation activities expected to occur progressively over the life of the operation and at the time of closure in connection with disturbances at the reporting date.

Routine operating costs that may impact the ultimate restoration and rehabilitation activities, such as waste material handling conducted as an integral part of a mining or production process, are not included in the provision. Costs arising from unforeseen circumstances, such as the contamination caused by unplanned discharges, are recognised as an expense and liability when the event gives rise to an obligation which is probable and capable of reliable estimation.

Restoration and rehabilitation provisions are measured at the expected value of future cash flows, discounted to their present value and determined according to the probability of alternative estimates of cash flows occurring for each operation. Discount rates used are specific to the country in which the operation is located. Significant judgements and estimates are involved in forming expectations of future activities and the amount and timing of the associated cash flows. Those expectations are formed based on existing environmental and regulatory requirements.

When provisions for restoration and rehabilitation are initially recognised, the corresponding cost is capitalised as an asset, representing part of the cost of acquiring the future economic benefits of the operation. The capitalised cost of restoration and rehabilitation activities is amortised over the estimated economic life of the operation on a units of production or straight-line basis. The value of the provision is progressively increased over time as the effect of discounting unwinds, creating an expense recognised as part of finance expenses.

Restoration and rehabilitation provisions are also adjusted for changes in estimates. Those adjustments are accounted for as a change in the corresponding capitalised cost, except where a reduction in the provision is greater than the unamortised capitalised cost, in which case the capitalised cost is reduced to nil and the remaining adjustment is recognised in profit or loss. Changes to the capitalised cost result in an adjustment to future amortisation charges. Adjustments to the estimated amount and timing of future restoration and rehabilitation cash flows are a normal occurrence in light of the significant judgements and estimates involved. Factors influencing those changes include revisions to estimated reserves, resources and lives of operations; developments in technology; regulatory requirements and environmental management strategies; changes in the estimated costs of anticipated activities, including the effects of inflation and movements in foreign exchange rates; and movements in general interest rates affecting the discount rate applied.

(ii) Legal claim

In the normal course of business, the Group may be involved in legal proceedings. Where management considers that it is more likely than not that proceedings will result in the Group compensating third parties, a provision is recognised for the best estimate of the amount expected to be paid. Where management considers that it is more likely than not that proceedings will not result in the Group compensating third parties or where, in rare circumstances, it is not considered possible to provide a sufficiently reliable estimate of the amount expected to be paid, no provision is made for any potential liability under the litigation but the circumstances and uncertainties involved are disclosed as contingent liabilities. The assessment of the likely outcome of legal proceedings and the amount of any potential liability involves significant judgement. As law and regulations in many of the countries in which the Group operates are continuing to evolve, particularly in the areas of taxation, sub-soil rights and protection of the environment, uncertainties regarding litigation and regulation are greater than those typically found in countries with more developed legal and regulatory frameworks.

(b) Disclosure

USD million	Pension liabilities	Site restoration	Provisions for legal claims	Total
Balance at 1 January 2021	**99**	**476**	**32**	**607**
Non-current	*91*	*427*	*–*	***518***
Current	*8*	*49*	*32*	***89***
Provisions made during the year	10	5	14	**29**
Provisions reversed during the year	–	–	(4)	**(4)**
Actuarial losses	4	–	–	**4**
Provisions used during the year	(7)	–	(20)	**(27)**
Effect of the passage of time	–	7	–	**7**
Change in estimates	–	(38)	–	**(38)**
Translation difference	–	68	–	**68**
Balance at 31 December 2021	**106**	**518**	**22**	**646**
Non-current	*98*	*387*	*–*	***485***
Current	*8*	*131*	*22*	***161***
Provisions made during the year	15	–	14	**29**
Provisions reversed during the year	–	–	(4)	**(4)**
Actuarial gain	(11)	–	–	**(11)**
Provisions used during the year	(8)	–	(6)	**(14)**
Effect of the passage of time	–	(1)	–	**(1)**
Change in estimates	–	(112)	–	**(112)**
Translation difference	(1)	(6)	–	**(7)**
Balance at 31 December 2022	**101**	**399**	**26**	**526**
Non-current	*93*	*287*	*–*	***380***
Current	*8*	*112*	*26*	***146***
	101	**399**	**26**	**526**

(c) Pension liabilities

As at 31 December 2022, the pension liability is represented by UC RUSAL of USD 60 million (31 December 2021: USD 66 million) and Power of USD 41 million (31 December 2021: USD 40 million).

The provision for pensions mainly comprises lump sum payments at retirement by aluminium plants located in Russia and Ukraine, and by electricity generating companies. The Group also provides pension benefits to eligible participants at facilities located outside of the Russian Federation and Ukraine.

Metals

Group subsidiaries in the Russian Federation

The Group voluntarily provides long-term and post-employment benefits to its former and existing employees including death-in-service, jubilee, lump sum upon retirement, material support for pensioners and death-in-pension benefits. Furthermore, the Group provides regular social support payments to some of its veterans of World War II.

The above employee benefit programs are of a defined benefit nature. The Group finances these programs on a pay-as-you-go basis, so plan assets are equal to zero.

Group subsidiaries in Ukraine

Due to legal requirements, the Ukrainian subsidiaries are responsible for partial financing of the state hardship pensions for those of its employees who worked, or still work, under severe and hazardous labour conditions (hardship early retirement pensions). These pensions are paid until the recipient reaches the age of entitlement to the State old age pension (55-60 years for female (dependent on year of birth) and 60 years for male employees). In Ukraine, the Group also voluntarily provides long-term and post-employment benefits to its employees including death-in-service, lump sum benefits upon retirement and death-in-pension benefits.

The above employee benefit programs are of a defined benefit nature. The Group finances these programs on a pay-as-you-go basis, so plan assets are equal to zero.

Group subsidiaries outside the Russian Federation and Ukraine

At its Guinean entities, the Group provides a death-in-service benefit and lump-sum benefits upon disability and old-age retirement.

At its Guyana subsidiary, the Group provides a death-in-service benefit.

At its Italian subsidiary (Eurallumina) the Group only provides lump sum benefits upon retirement, which relate to service up to 1 January 2007.

In Sweden (Kubikenborg Aluminium AB), the Group provides defined benefit lifelong and temporary pension benefits. The lifelong benefits are dependent on the past service and average salary level of the employee, with an accrual rate that depends on the salary bracket the employee is in. The liability relates only to benefits accrued before 1 January 2004.

The number of employees in all jurisdictions eligible for the plans as at 31 December 2022 and 2021 was 51,783 and 50,518, respectively. The number of pensioners in all jurisdictions as at 31 December 2022 and 2021 was 39,302 and 42,086, respectively.

The Metals segment expects to pay under the defined benefit retirement plans an amount of USD 5 million during the 12 month period beginning on 1 January 2023.

Actuarial valuation of pension liabilities

The actuarial valuation of the Group and the portion of the Group funds specifically designated for the Group's employees were completed by a qualified actuary, Konstantin Kozlov, as at 31 December 2022, using the projected unit credit method as stipulated by IAS 19.

The key actuarial assumptions (weighted average, weighted by DBO) are as follows:

	31 December 2022	**31 December 2021**
	% per annum	**% per annum**
Discount rate	9.5	7.9
Future salary increases	8.6	8.7
Future pension increases	5.0	4.2
Staff turnover	4.7	4.7
Mortality	USSR population table for 1985, Ukrainian population table for 2000	USSR population table for 1985, Ukrainian population table for 2000
Disability	70% Munich Re for Russia; 40% of death probability for Ukraine	70% Munich Re for Russia; 40% of death probability for Ukraine

As at 31 December 2022 and 31 December 2021 the Group's obligations were fully uncovered as the Group has only wholly unfunded plans.

POWER

The principal assumptions used in determining pension obligations for the pension plans are shown below:

	31 December 2022	**31 December 2021**
Discount rate	10.1%	8.5%
Future salary increases	6.2%	5.7%
Pension and inflation rate increases	4.7%	4.2%

(d) Site restoration and environmental provisions

The Group provides for site restoration obligations when there is a specific legal or constructive obligation for mine reclamation, landfill closure (primarily comprising red mud basin disposal sites) or specific lease restoration requirements. The Group does not record any obligations with respect to decommissioning of its refining or smelting facilities and restoration and rehabilitation of the surrounding areas unless there is a specific plan to discontinue operations at a facility. This is because any significant costs in connection with decommissioning of refining or smelting facilities and restoration and rehabilitation of the surrounding areas would be incurred no earlier than when the facility is closed and the facilities are currently expected to operate over a term in excess of 50-100 years due to the perpetual nature of the refineries and smelters and continuous maintenance and upgrade programs resulting in the carrying values of any such liabilities being negligible.

The site restoration provision relates primarily to mine reclamation and red mud basin disposal sites at alumina refineries and ash dumps removal at coal burning electricity and heat generation stations.

The principal assumptions used in determining site restoration provision are:

	31 December 2022	**31 December 2021**
Timing of cash outflows	2023: USD 111 million 2024-2028: USD 46 million 2029-2038: USD 156 million after 2038: USD 456 million	2022: USD 130 million 2023-2027: USD 30 million 2028-2037: USD 145 million after 2037: USD 410 million
Years required to fill the ash dumps	26.8	26.5
Discount rate for Coal CHPs CGU assets after adjusting for inflation	6.71%	4.2%
Risk free discount rate for UC RUSAL after adjusting for inflation	3.60%	1.19%

The risk free rate for the year 2021-2022 represents an effective rate, which comprises rates differentiated by years of obligation settlement and by currencies in which the provisions were calculated.

At each reporting date management have assessed the provisions for site restoration and concluded that the provisions and disclosures are adequate.

(e) Provisions for legal claims

The Group’s subsidiaries are subject to a variety of lawsuits and claims in the ordinary course of its business. As at 31 December 2022, there were several claims filed against the Group’s subsidiaries contesting breaches of contract terms and non-payment of existing obligations. Management has reviewed the circumstances and estimated that the amount of probable outflow related to these claims should not exceed USD 26 million (31 December 2021: USD 22 million).

At each reporting date management has assessed the provisions for litigation and claims and concluded that the provisions and disclosures are adequate.

19. Derivative financial assets and liabilities

Accounting policies

The Group enters, from time to time, into various derivative financial instruments to manage its exposure to commodity price risk, foreign currency risk and interest rate risk.

Embedded derivatives are separated from the host contract and accounted for separately if the economic characteristics and risks of the host contract and the embedded derivative are not closely related, a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative and the combined instrument is not measured at fair value through profit or loss.

On initial designation of the derivative as a hedging instrument, the Group formally documents the relationship between the hedging instrument and hedged item, including the risk management objectives and strategy in undertaking the hedge transaction and the hedged risk, together with the methods that will be used to assess the effectiveness of the hedging relationship. The Group makes an assessment, both at the inception of the hedge relationship as well as on an ongoing basis, of whether the hedging instruments are expected to be highly effective in offsetting the changes in the fair value or cash flows of the respective hedged items attributable to the hedged risk, and whether the actual results of each hedge are within a range of 80%-125%. For a cash flow hedge of a forecast transaction, the transaction should be highly probable to occur and should present an exposure to variation in cash flows that ultimately could affect reported profit or loss.

Derivatives are recognised initially at fair value; attributable transaction costs are recognised in profit or loss when incurred. Subsequent to initial recognition, derivatives are measured at fair value.

The measurement of fair value of derivative financial instruments, including embedded derivatives, is based on quoted market prices. Where no price information is available from a quoted market source, alternative market mechanisms or recent comparable transactions, fair value is estimated based on the Group's views on relevant future prices, net of valuation allowances to accommodate liquidity, modelling and other risks implicit in such estimates. Changes in the fair value therein are accounted for as described below.

When a derivative is designated as the hedging instrument in a hedge of the variability in cash flows attributable to a particular risk associated with a recognised asset or liability or a highly probable forecast transaction that could affect profit or loss, the effective portion of changes in the fair value of the derivative is recognised in other comprehensive income and presented in the hedging reserve in equity. Any ineffective portion of changes in the fair value of a derivative is recognised in profit or loss.

When the hedged item is a non-financial asset, the amount accumulated in equity is included in the carrying amount of the asset when the asset is recognised. In other cases, the amount accumulated in equity is reclassified to profit or loss in the same period that the hedged item affects profit or loss. If the hedging instrument no longer meets the criteria for hedge accounting, expires or is sold, terminated or exercised, or the designation is revoked, then hedge accounting is discontinued prospectively. If the forecast transaction is no longer expected to occur, then the balance in equity is reclassified to profit or loss.

Changes in the fair value of separated embedded derivatives and derivative financial instruments not designated for hedge accounting are recognised immediately in profit or loss.

Disclosures

	31 December 2022 USD million		31 December 2021 USD million	
	Derivative assets	**Derivative liabilities**	**Derivative assets**	**Derivative liabilities**
Petroleum coke supply contracts and other raw materials	–	–	24	15
Forward contracts for aluminium and other instruments	168	–	118	26
Cross currency swap	–	–	–	165
Total	**168**	**–**	**142**	**206**
Non-current	*90*	–	*22*	*61*
Current	*78*	–	*120*	*145*

Derivative financial instruments are recorded at their fair value at each reporting date. Fair value is estimated in accordance with Level 3 of the fair value hierarchy based on management estimates and consensus economic forecasts of relevant future prices, net of valuation allowances to accommodate liquidity, modelling and other risks implicit in such estimates. The Group's policy is to recognise transfers between levels of fair value hierarchy as at the date of the event or change in circumstances that caused the transfer. The movement in the balance of Level 3 fair value measurements of derivatives is as follows:

	31 December	
	2022	2021
	USD million	USD million
Balance at the beginning of the year	**(64)**	**(135)**
Unrealised changes in fair value recognised in statement of profit or loss (finance expense) during the year	(191)	(352)
Unrealised changes in fair value recognised in other comprehensive income (cash flow hedge) during the year	(131)	(28)
Realised portion of electricity, coke and raw material contracts and cross currency swap	554	451
Balance at the end of the year	**168**	**(64)**

During the year 2022 there have been no changes in valuation techniques used to calculate the derivative financial instruments compared to prior year.

Management believes that the values assigned to the key assumptions and estimates represented the most realistic assessment of future trends. The results for the derivative instruments are not particularly sensitive to any factors other than the assumptions disclosed above.

UC RUSAL entered into various petroleum coke supply contracts and other raw materials where the price of coke is determined with reference to the Brent oil price, LME aluminium price and average monthly aluminium quotations. UC RUSAL also sells products to various third parties at prices that are influenced by changes in London Metal Exchange aluminium prices. From time to time UC RUSAL enters into forward sales and purchase contracts for a portion of its anticipated primary aluminium sales and purchases to reduce the risk of fluctuating prices on these sales. During the year ended 31 December 2022 the Group recognised a total net loss of USD 191 million in relation to the above contracts (31 December 2021: loss of USD 352 million). Unrealised changes in fair value recognised in other comprehensive income (cash flow hedge) during the period are fully attributable to cross currency swaps (note 17(b)).

20. Financial risk management and fair values

(a) Fair values

The methods used to estimate the fair values of the financial instruments are as follows:

Trade and other receivables, short-term investments, cash and cash equivalents, current loans and borrowings and trade and other payables: the carrying amounts approximate fair value because of the short maturity period of the instruments.

Investments in equity securities: measured at fair value through profit and loss, so, its carrying amount is equal its fair value.

Long-term loans and borrowings, other non-current liabilities: the fair values of other non-current liabilities are based on the present value of the anticipated cash flows and approximate carrying value, other than Eurobonds and RUSAL Bratsk bonds issued. The fair value of the loans and borrowings with fixed and floating interest rate as at 31 December 2022 and 31 December 2021 was calculated based on the present value of future principal and interest cash flows, using discount interest rate that take into account the currency of the debt, expected maturity dates and credit risks associated with the Group that existed at the reporting date.

Derivatives: the fair value of derivative financial instruments, including embedded derivatives, is based on quoted market prices. Where no price information is available from a quoted market source, alternative market mechanisms or recent comparable transactions, fair value is estimated based on the Group's views on relevant future prices, net of valuation allowances to accommodate liquidity, modelling and other risks implicit in such estimates. Option-based derivatives are valued using Black-Scholes models and Monte-Carlo simulations. The derivative financial instruments are recorded at their fair value at each reporting date.

The following table presents the fair value of Group's financial instruments measured at the end of the reporting period on a recurring basis, as well as for instruments for which fair value is disclosed, categorised into the three-level fair value hierarchy as defined by IFRS 13, *Fair Value Measurement*. The level into which a fair value measurement is classified is determined with reference to the observability and significance of the inputs used in the valuation technique as follows:

- Level 1 valuations: fair value measured using only Level 1 inputs i.e. unadjusted quoted prices in active markets for identical assets or liabilities at the measurement date.
- Level 2 valuations: fair value measured using Level 2 inputs i.e. observable inputs which fail to meet Level 1, and not using significant unobservable inputs. Unobservable inputs are inputs for which market data are not available.
- Level 3 valuations: fair value measured using significant unobservable inputs.

As at 31 December 2022

		Carrying amount				Fair value			
	Note	Derivatives USD million	Loans and receivables USD million	Other financial assets/ (liabilities) USD million	Total USD million	Level 1 USD million	Level 2 USD million	Level 3 USD million	Total USD million
Financial assets measured at fair value									
Forward contracts for aluminium and other instruments	19	168	–	–	**168**	–	–	168	**168**
Investments in equity securities measured at fair value through profit and loss	15	–	–	459	**459**	459	–	–	**459**
		168	**–**	**459**	**627**	**459**	**–**	**168**	**627**
Financial assets not measured at fair value*									
Trade and other receivables	15	–	1,906	–	**1,906**	–	1,906	–	**1,906**
Short-term investments		–	50	–	**50**	–	50	–	**50**
Cash and cash equivalents	15	–	3,477	–	**3,477**	–	3,477	–	**3,477**
		–	**5,433**	**–**	**5,433**	**–**	**5,433**	**–**	**5,433**
Financial liabilities not measured at fair value*									
Loans and borrowings	17	–	–	(8,741)	**(8,741)**	–	(8,824)	–	**(8,824)**
Unsecured bond issue	17	–	–	(4,859)	**(4,859)**	(1,935)	(2,907)	–	**(4,842)**
Trade and other payables	15	–	–	(1,687)	**(1,687)**	–	(1,687)	–	**(1,687)**
		–	**–**	**(15,287)**	**(15,287)**	**(1,935)**	**(13,418)**	**–**	**(15,353)**

* The Group considers that the carrying amounts of short-term trade receivables and payables are a reasonable approximation of fair values.

As at 31 December 2021

		Carrying amount				Fair value			
	Note	Derivatives USD million	Loans and receivables USD million	Other financial assets/ (liabilities) USD million	Total USD million	Level 1 USD million	Level 2 USD million	Level 3 USD million	Total USD million
Financial assets measured at fair value									
Petroleum coke supply contracts and other raw materials	19	24	–	–	**24**	–	–	24	**24**
Forward contracts for aluminium and other instruments	19	118	–	–	**118**	–	–	118	**118**
Investments in equity securities measured at fair value through profit and loss	15	–	–	316	**316**	316	–	–	**316**
		142	**–**	**316**	**458**	**316**	**–**	**142**	**458**
Financial assets not measured at fair value*									
Trade and other receivables	15(b)	–	2,410	–	**2,410**	–	2,410	–	**2,410**
Short-term investments		–	131	–	**131**	–	131	–	**131**
Cash and cash equivalents	15	–	2,330	–	**2,330**	–	2,330	–	**2,330**
		–	**4,871**	**–**	**4,871**	**–**	**4,871**	**–**	**4,871**
Financial liabilities measured at fair value									
Cross currency swaps	19	(165)	–	–	**(165)**	–	–	(165)	**(165)**
Petroleum coke supply contracts and other raw materials	19	(15)	–	–	**(15)**	–	–	(15)	**(15)**
Forward contracts for aluminium and other instruments	19	(26)	–	–	**(26)**	–	–	(26)	**(26)**
		(206)	**–**	**–**	**(206)**	**–**	**–**	**(206)**	**(206)**
Financial liabilities not measured at fair value*									
Loans and borrowings	17	–	–	(8,477)	**(8,477)**	–	(8,614)	–	**(8,614)**
Unsecured bond issue	17	–	–	(2,434)	**(2,434)**	(941)	(1,524)	–	**(2,465)**
Trade and other payables	15	–	–	(1,643)	**(1,643)**	–	(1,643)	–	**(1,643)**
		–	**–**	**(12,554)**	**(12,554)**	**(941)**	**(11,781)**	**–**	**(12,722)**

* The Group considers that the carrying amounts of short-term trade receivables and payables are a reasonable approximation of fair values.

(b) Financial risk management objectives and policies

The Group's principal financial instruments comprise bank loans and trade payables. The main purpose of these financial instruments is to raise finance for the Group's operations. The Group has various financial assets such as trade receivables and cash and short-term deposits, which arise directly from its operations.

The main risks arising from the Group's financial instruments are cash flow interest rate risk, liquidity risk, foreign currency risk and credit risk. Management reviews and agrees policies for managing each of these risks which are summarised below.

The Board of Directors has overall responsibility for the establishment and oversight of the Group's risk management framework.

The Group's risk management policies are established to identify and analyse the risks faced by the Group, to set appropriate risk limits and controls, and to monitor risks and adherence to limits. Risk management policies and systems are reviewed regularly to reflect changes in market conditions and the Group's activities. The Group, through its training and management standards and procedures, aims to develop a disciplined and constructive control environment in which all employees understand their roles and obligations.

(c) Market risk

Market risk is the risk that changes in market prices, such as foreign exchange rates, interest rates and equity prices will affect the Group's income or the value of its holdings of financial instruments. The objective of market risk management is to manage and control market risk exposures within acceptable parameters, while optimising returns.

(i) Tariffs and commodity price risk

During the years ended 31 December 2022 and 31 December 2021, the Group has entered into certain commodity derivatives contracts in order to manage its exposure of commodity price risks.

The tariffs for electricity, heat and transmission services applied by the Group's significant subsidiaries are currently partially determined by government bodies. The Group cannot directly influence or mitigate the risks in relation to the change in tariffs.

A significant portion of the Group's generation activities is based on coal burning stations. A change in coal prices may have a significant impact on the Group's operations. To mitigate the risk of fluctuations in coal prices, the Group has historically increased its internal coal production through acquisition of coal mines and licences in the Eastern Siberia region.

(ii) Interest rate risk

The Group's exposure to the risk of changes in market interest rates relates primarily to the Group's long-term debt obligations with floating interest rates (note 17). The Group's policy is to manage its interest costs by monitoring changes in interest rates with respect to its borrowings.

The following table details the interest rate profile of the Group's and the Company's borrowings at the reporting date.

	31 December 2022		**31 December 2021**	
	Effective interest rate %	**USD million**	**Effective interest rate %**	**USD million**
Fixed rate loans and borrowings				
Loans and borrowings (note 17(a))	0.01%-11.0%	5,904	0.01%-10.5%	2,824
		5,904		**2,824**
Variable rate loans and borrowings				
Loans and borrowings (note 17(a))	2.86%-10.0%	7,618	0.45%-10.5%	8,019
		7,618		**8,019**
		13,522		**10,843**

The following table demonstrates the sensitivity to cash flows from interest rate risk arising from floating rate non-derivative instruments held by the Group at the reporting date in respect of a reasonably possible change in interest rates, with all other variables held constant. The impact on the Group's profit before taxation and equity and retained profits/accumulated losses is estimated as an annualized input on interest expense or income of such a change in interest rates. The analysis has been performed on the same basis for all years presented.

	Increase/ decrease in basis points	**Effect on profit before taxation for the year**	**Effect on equity for the year**
		USD million	**USD million**
As at 31 December 2022			
Basis percentage points	+100	(76)	(61)
Basis percentage points	-100	76	61
As at 31 December 2021			
Basis percentage points	+100	(80)	(64)
Basis percentage points	-100	80	64

(iii) Foreign currency risk

The Group is exposed to currency risk on sales, purchases and borrowings that are denominated in a currency other than the respective functional currencies of group entities, primarily USD but also the Russian Rouble, Ukrainian Hryvna and Euros. The currencies in which these transactions primarily are denominated are RUB, USD and EUR.

Borrowings are primarily denominated in currencies that match the cash flows generated by the underlying operations of the Group, primarily USD but also RUB, EUR and yuan. This provides an economic hedge.

In respect of other monetary assets and liabilities denominated in foreign currencies, the Group ensures that its net exposure is kept to an acceptable level by buying or selling foreign currencies at spot rates when necessary to address short-term imbalances or entering into currency swap arrangements.

The Group's exposure at the reporting date to foreign currency risk arising from recognised assets and liabilities denominated in a currency other than the functional currency of the entity to which they relate is set out in the table below. Differences resulting from the translation of the financial statements of foreign operations into the Group's presentation currency are ignored.

USD million	**USD-denominated vs. RUB functional currency 31 December 2022**	**USD-denominated vs. RUB functional currency 31 December 2021**	**RUB-denominated vs. USD functional currency 31 December 2022**	**RUB-denominated vs. USD functional currency 31 December 2021**	**EUR-denominated vs. USD functional currency 31 December 2022**	**EUR-denominated vs. USD functional currency 31 December 2021**	**Denominated in other currencies vs. USD functional currency 31 December 2022**	**Denominated in other currencies vs. USD functional currency 31 December 2021**
Non-current assets	–	–	86	38	21	–	–	–
Trade and other receivables	–	2	914	821	219	184	60	69
Cash and cash equivalents	–	–	1,378	428	148	81	684	50
Loans and borrowings	–	–	(684)	(549)	–	(19)	(1,152)	–
Provisions	–	–	(66)	(84)	–	(21)	(17)	(18)
Derivative financial liabilities	–	–	–	(16)	–	–	–	–
Income tax	–	–	(157)	(24)	–	–	–	(1)
Non-current liabilities	–	–	(46)	(1)	(3)	(6)	(2)	–
Bonds	–	–	(406)	(1)	–	–	(3,219)	–
Trade and other payables	(1)	(1)	(514)	(1,080)	(111)	(104)	(119)	(135)
Net exposure arising from recognised assets and liabilities	**(1)**	**1**	**505**	**(468)**	**274**	**115**	**(3,765)**	**(35)**

(iv) Foreign currency sensitivity analysis

The following tables indicate the change in the Group's profit before taxation (and accumulated losses) and other comprehensive income that could arise if foreign exchange rates to which the Group has significant exposure at the reporting date had changed at that date, assuming all other risk variables remained constant.

	Year ended 31 December 2022		
	Change in exchange rates	USD million Effect on profit before taxation for the year	USD million Effect on equity for the year
Depreciation of USD vs. RUB	15%	76	76
Depreciation of USD vs. EUR	10%	27	27
Depreciation of USD vs. other currencies	5%	(188)	(188)

	Year ended 31 December 2021		
	Change in exchange rates	USD million Effect on profit before taxation for the year	USD million Effect on equity for the year
Depreciation of USD vs. RUB	15%	(70)	(70)
Depreciation of USD vs. EUR	10%	11	11
Depreciation of USD vs. other currencies	5%	(2)	(2)

Results of the analysis as presented in the above tables represent an aggregation of the effects on the Group entities' profit before taxation and other comprehensive income measured in the respective functional currencies, translated into USD at the exchange rates ruling at the reporting date for presentation purposes.

The sensitivity analysis assumes that the change in foreign exchange rates had been applied to re-measure those financial instruments held by the Group which expose the Group to foreign currency risk at the reporting date. The analysis excludes differences that would result from the translation of financial statements of foreign operations into the Group's presentation currency. The analysis has been performed on the same basis for all years presented.

(d) Liquidity risk

Liquidity risk is the risk that the Group will not be able to meet its financial obligations as they fall due. The Group's policy is to maintain sufficient cash and cash equivalents or have available funding through an adequate amount of committed credit facilities to meet its operating and financial commitments.

The following tables show the remaining contractual maturities at the reporting date of the Group's non-derivative financial liabilities, which are based on contractual undiscounted cash flows (including interest payment computed using contractual rates, or if floating, based on rates current at the reporting date) and the earliest the Group can be required to pay:

	31 December 2022 Contractual undiscounted cash outflow					
	Within 1 year or on demand	More than 1 year but less than 2 years	More than 2 years but less than 5 years	More than 5 years	Total	Carrying amount
	USD million	USD million	USD million	USD million	USD million	USD million
Trade and other payables to third parties	1,998	1	–	–	**1,999**	1,999
Trade and other payables to related parties	115	–	–	–	**115**	115
Bonds	1,156	698	3,014	–	**4,868**	4,859
Loans and borrowings, including interest payable	2,928	1,465	5,942	271	**10,606**	8,741
	6,197	**2,164**	**8,956**	**271**	**17,588**	**15,714**
Financial guarantees issued: Maximum amount guaranteed	40	79	–	–	**119**	–

	31 December 2021 Contractual undiscounted cash outflow					
	Within 1 year or on demand	**More than 1 year but less than 2 years**	**More than 2 years but less than 5 years**	**More than 5 years**	**Total**	**Carrying amount**
	USD million	**USD million**	**USD million**	**USD million**	**USD million**	**USD million**
Trade and other payables to third parties	1,540	–	–	–	**1,540**	1,540
Trade and other payables to related parties	103	–	–	–	**103**	103
Bonds	1,234	1,354	–	–	**2,588**	2,434
Loans and borrowings, including interest payable	2,170	2,652	3,947	1,704	**10,473**	8,477
	5,047	**4,006**	**3,947**	**1,704**	**14,704**	**12,554**
Financial guarantees issued: Maximum amount guaranteed	44	69	–	–	**113**	–

At 31 December 2022 and 31 December 2021 the Group's contractual undertaking to provide loans under the loan agreement between the Group, PJSC RusHydro and BoAZ is included at maximum exposure for the Group in the liquidity risk disclosure above.

(e) Credit risk

The Group trades only with recognised, creditworthy third parties. It is the Group's policy that all customers who wish to trade on credit terms are subject to credit verification procedures. The majority of the Group's third party trade receivables represent balances with the world's leading international corporations operating in the metals industry. In addition, receivable balances are monitored on an ongoing basis with the result that the Group's exposure to credit loss is not significant. Goods are normally sold subject to retention of title clauses, so that in the event of non-payment the Group may have a secured claim. The Group does not require collateral in respect of trade and other receivables. The details of impairment of trade and other receivables are disclosed in note 15. Cash balances are held with high credit quality financial institutions. The extent of the Group's credit exposure is represented by the aggregate balance of financial assets and financial guarantees and loan commitments given.

At 31 December 2022 and 31 December 2021, the Group has no concentration of credit risk within any single largest customer but 27.0% and 12.6% of the total trade receivables were due from the Group's five largest customers.

(f) Capital risk management

The Group's objectives when managing capital 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.

The Group manages its capital structure and makes adjustments to it, in light of changes in economic conditions. To maintain or adjust the capital structure, the Group may adjust the amount of dividends paid to shareholders, return capital to shareholders, issue new shares or sell assets to reduce debt.

The Board's policy is to maintain a strong capital base so as to maintain investor, creditor and market confidence and to sustain future development of the business. The Board of Directors monitors the return on capital, which the Group defines as net operating income divided by total shareholders' equity, excluding non-controlling interests. The Board of Directors also monitors the level of dividends to ordinary shareholders.

The Board seeks to maintain a balance between higher returns that might be possible with higher levels of borrowings and the advantages and security afforded by a sound capital position.

There were no changes in the Group's approach to capital management during the year.

The Parent Company and its subsidiaries were subject to externally imposed capital requirements in the both years presented in these consolidated financial statements.

(g) Master netting or similar agreements

The Group may enter into sales and purchase agreements with the same counterparty in the normal course of business. The related amounts receivable and payable do not always meet the criteria for offsetting in the statement of financial position.

The following table sets out the carrying amounts of recognised financial instruments that are subject to the above agreements.

	Year ended 31 December 2022	
	USD million	USD million
	Trade receivables	Trade payables
Gross amounts	95	(112)
Net amounts presented in the statement of financial position	**95**	**(112)**
Amounts related to recognised financial instruments that do not meet some or all of the offsetting criteria	(47)	47
Net amount	**48**	**(65)**

	Year ended 31 December 2021	
	USD million	USD million
	Trade receivables	Trade payables
Gross amounts	114	(90)
Net amounts presented in the statement of financial position	**114**	**(90)**
Amounts related to recognised financial instruments that do not meet some or all of the offsetting criteria	(36)	36
Net amount	**78**	**(54)**

21. Commitments

(a) Capital commitments

The Group had outstanding capital commitments which had been contracted for at 31 December 2022 and 31 December 2021 in the amount of USD 787 million and USD 655 million, including VAT, respectively. These commitments are due over a number of years.

(b) Purchase commitments

Commitments with third parties for purchases of alumina, bauxite, other raw materials and other purchases in 2023-2034 under supply agreements are estimated from USD 3,450 million to USD 5,169 million at 31 December 2022 (31 December 2021: USD 2,517 million to USD 4,534) depending on the actual purchase volumes and applicable prices.

Commitments with related parties for purchases of primary aluminium, alloys and other purchases in 2023-2030 under supply agreements are estimated from USD 4,824 million to USD 7,283 million at 31 December 2022 (31 December 2021: USD 5,733 million to USD 7,540 million) depending on the actual purchase volumes and applicable prices.

(c) Sale commitments

Commitments with third parties for sales of alumina and other raw materials in 2023-2034 are estimated from USD 852 million to USD 1,275 million at 31 December 2022 (31 December 2021: from USD 1,187 million to USD 1,596 million) and will be settled at market prices at the date of delivery. There are no commitments with related parties for sales of alumina as at 31 December 2022 and 31 December 2021.

Commitments with related parties for sales of primary aluminium and alloys in 2023 are estimated from USD 149 million to USD 182 million at 31 December 2022 (31 December 2021: from USD 337 million to USD 412 million). Commitments with third parties for sales of primary aluminium and alloys in 2023-2027 are estimated to range from USD 5,505 million to USD 8,386 million at 31 December 2022 (31 December 2021: from USD 8,842 million to USD 12,148 million).

(d) Social commitments

The Group contributes to the maintenance and upkeep of the local infrastructure and the welfare of its employees, including contributions toward the development and maintenance of housing, hospitals, transport services, recreation and other social needs of the regions of the Russian Federation where the Group's production entities are located. The funding of such assistance is periodically determined by management and is appropriately capitalised or expensed as incurred.

22. Contingencies

(a) Taxation

Russian tax, currency and customs legislation is subject to varying interpretations, and changes, which can occur frequently. Management's interpretation of such legislation as applied to the transactions and activities of the Group may be challenged by the relevant local, regional and federal authorities. Recent developments in the Russian environment suggest that the authorities in this country are becoming more active in seeking to enforce, through the Russian court system, interpretations of the tax legislation, in particular in relation to the use of certain commercial trading structures, which may be selective for particular tax payers and different from the authorities' previous interpretations or practices. Recent events within the Russian Federation suggest that the tax authorities are taking a more assertive and substance-based position in their interpretation and enforcement of tax legislation.

In addition to the amounts of income tax the Group has provided, there are certain tax positions taken by the Group where it is reasonably possible (though less than 50% likely) that additional tax may be payable upon examination by the tax authorities or in connection with ongoing disputes with tax authorities. The Group's best estimate of the aggregate maximum of additional amounts that it is reasonably possible (though less than 50% likely) may become payable if these tax positions were not sustained at 31 December 2022 is USD 61 million (31 December 2021: USD 26 million).

(b) Environmental contingencies

The Group and its predecessor entities have operated in the Russian Federation, Ukraine, Jamaica, Guyana, the Republic of Guinea and the European Union for many years and certain environmental problems have developed. Governmental authorities are continually considering environmental regulations and their enforcement and the Group periodically evaluates its obligations related thereto. As obligations are determined, they are recognised immediately. The outcome of environmental liabilities under proposed or any future legislation, or as a result of stricter enforcement of existing legislation, cannot reasonably be estimated. Under current levels of enforcement of existing legislation, management believes there are no possible liabilities, which will have a material adverse effect on the financial position or the operating results of the Group. However, the Group anticipates undertaking significant capital projects to improve its future environmental performance.

(c) Legal contingencies

The Group's business activities expose it to a variety of lawsuits and claims which are monitored, assessed and contested on an ongoing basis. Where management believes that a lawsuit or another claim would result in the outflow of the economic benefits for the Group, a best estimate of such outflow is included in provisions in the consolidated financial statements (note 18(e)). As at 31 December 2022, the amount of claims, where management assesses outflow as possible approximates USD 33 million (31 December 2021: USD 21 million).

(d) Other contingent liabilities

Where the Group enters into financial guarantee contracts to guarantee the indebtedness of related parties, the Group considers these to be insurance arrangements and accounts for them as such. In this respect, the Group treats the guarantee contract as a contingent liability until such time as it becomes probable that the Group will be required to make a payment under the guarantee.

In September 2013, UC RUSAL and PJSC RusHydro entered into an agreement with BoAZ to provide loans, if the latter is unable to fulfil its obligations under its credit facilities. The aggregate exposure under the agreement is limited to RUB 16.8 billion (31 December 2022 and 31 December 2021 USD 239 million and USD 226 million, respectively) and is split between the Group and PJSC RusHydro in equal proportion.

23. Related party transactions

(a) Accounting policy

(a) A person, or a close member of that person's family, is related to the Group if that person:

- (i) Has control or joint control over the Group;
- (ii) Has significant influence over the Group; or
- (iii) Is a member of the key management personnel of the Group or the Group's parent.

(b) An entity is related to the Group if any of the following conditions applies:

- (i) The entity and the Group are members of the same group (which means that each parent, subsidiary and fellow subsidiary is related to the others);
- (ii) One entity is an associate or joint venture of the other entity (or an associate or joint venture of a member of a group of which the other entity is a member);
- (iii) Both entities are joint ventures of the same third party;
- (iv) One entity is a joint venture of a third entity and the other entity is an associate of the third entity;
- (v) The entity is a post-employment benefit plan for the benefit of employees of either the Group or an entity related to the Group;
- (vi) The entity is controlled or jointly controlled by a person identified in (a);
- (vii) 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);
- (viii) 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 group's parent.

Close members of the family of a person are those family members who may be expected to influence, or be influenced by, that person in their dealings with the entity.

(b) Transactions with related parties

The Group transacts with related parties, the majority of which are under control of SUAL Partners Limited or its shareholders, associates and joint ventures and other related parties.

Sales to related parties for the year are disclosed in note 5, receivables from and payables to related parties are disclosed in note 15.

Purchases of raw materials and services from related parties for the period were as follows:

	Year ended 31 December	
	2022	2021
	USD million	USD million
Purchase of raw materials	**(988)**	**(738)**
Companies capable of exerting significant influence	(30)	(24)
Associates and joint ventures	(958)	(714)
Energy costs	**(104)**	**(76)**
Companies capable of exerting significant influence	(48)	(33)
Other related parties	–	(1)
Associates and joint ventures	(56)	(42)
Other services	**(30)**	**(111)**
Other related parties	–	–
Associates and joint ventures	(30)	(111)
	(1,122)	**(925)**

(c) Related parties balances

At 31 December 2022, there are no balances of related parties included in non-current assets (31 December 2021: USD 2 million). At 31 December 2022, included in non-current liabilities are balances of related parties – associates and joint ventures of USD 16 million (31 December 2021: USD 14 million).

(d) Remuneration to key management

For the year ended 31 December 2022 remuneration to key management personnel comprised short-term benefits and amounted to USD 18 million from which Board members received USD 6 million (year ended 31 December 2021: USD 26 million from which Board members received USD 10 million).

24. Events subsequent to the reporting date

In February 2023, UC RUSAL entered into a new credit facility with a Russian bank in the total amount up to USD 4.4 billion and maturity on 24 December 2027. On 3 February 2023 the funds in the amount of 15.8 billion Chinese yuan were partially drawdown with an interest rate 4.75% and were used to refinance the principal outstanding under the existing debt with a Russian bank

On 8 February 2023 pursuant to the Extraordinary resolution of the noteholders UC RUSAL redeemed the Eurobond with a coupon 4.85% to noteholders who hold Eurobond through NSD and other Russian custodians being the NSD direct participants in the amount of USD 418 million. The redemption to noteholders who hold Eurobond through foreign clearing and settlement systems will be made in accordance with terms of the Extraordinary resolution of the noteholders.

In February 2023 the High Anticorruption Court of Ukraine decided to transfer the ownership over Mykolaiv Alumina Refinery Company Ltd from the Group in favour of Ukrainian Government. As of the date of authorization of these consolidated financial statements for issue, management of the Group is planning to submit an appeal against the Court’s decision. Due to the developments of geopolitical situation so far, the carrying values of assets of Mykolaiv Alumina Refinery Company Ltd were written off as at 31 December 2022.

25. Accounting estimates and judgements

The Group has identified the following critical accounting policies under which significant judgements, estimates and assumptions are made and where actual results may differ from these estimates under different assumptions and conditions and may materially affect financial results of the financial position reported in future periods.

Property, plant and equipment – recoverable amount

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

Fair value is determined as the amount that would be obtained from the sale of the asset in an arm's length transaction between knowledgeable and willing parties, and is generally determined as the present value of the estimated future cash flows expected to arise from the continued use of the asset, including any expansion prospects, and its eventual disposal.

Value in use is also generally determined as the present value of the estimated future cash flows, but only 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), reserves (refer "Reserve estimates" below), operating costs, restoration and rehabilitation costs and future capital expenditure. 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 the recoverable amount 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 the profit or loss.

Property, plant and equipment – hydro assets – fair value

In accordance with the Group's accounting policy, hydro assets are carried at a revalued amount, being their fair value at the date of the revaluation less any subsequent accumulated depreciation and subsequent accumulated impairment losses. Revaluations are made with sufficient regularity to ensure that the carrying amount does not differ materially from that which would be determined using fair value at the end of the reporting period.

The valuation analysis is primarily based on the cost approach to determine depreciated replacement cost. This method considers the cost to reproduce or replace the property, plant and equipment, adjusted for physical depreciation, functional and economic obsolescence.

This policy requires management to make estimates and assumptions regarding both costs, as there is no active market for used assets of that type, and macroeconomic indicators to assess economic obsolescence which are subject to risk and uncertainty; hence there is a possibility that changes in circumstances will alter these estimates, which may impact the fair value of hydro assets. In such circumstances, the fair value of hydro assets may be lower with any consequential decrease in revaluation reserve recognised through other comprehensive income.

Inventories – net realisable value

The Group recognises write-downs of inventories based on an assessment of the net realisable value of the inventories. A write-down is applied to the inventories where events or changes in circumstances indicate that the net realisable value is less than cost. The determination of net realisable value requires the use of judgement and estimates. Where the expectation is different from the original estimates, such a difference will impact the carrying value of the inventories and the write-down of inventories charged to the profit or loss in the periods in which such estimate has been changed.

Goodwill – recoverable amount

In accordance with the Group's accounting policy, goodwill is allocated to the Group's operating segments before aggregation segments as they represent the lowest level within the Group at which the goodwill is monitored for internal management purposes and is tested for impairment annually at 31 December by preparing a formal estimate of recoverable amount. Recoverable amount is estimated as the value in use of the business segment.

Similar considerations to those described above in respect of assessing the recoverable amount of property, plant and equipment apply to goodwill.

Investments in associates and joint ventures – recoverable amount

In accordance with the Group's accounting policies, each investment in an associate or joint venture is evaluated every reporting period to determine whether there are any indications of impairment after application of the equity method of accounting. If any such indication exists, a formal estimate of recoverable amount is performed and an impairment loss recognised to the extent that the carrying amount exceeds the recoverable amount. The recoverable amount of an investment in an associate or joint venture is measured at the higher of fair value less costs to sell and value in use.

Similar considerations to those described above in respect of assessing the recoverable amount of property, plant and equipment apply to investments in associates or joint ventures. In addition to the considerations described above the Group may also assess the estimated future cash flows expected to arise from dividends to be received from the investment, if such information is available and considered reliable.

Legal proceedings

In the normal course of business, the Group may be involved in legal proceedings. Where management considers that it more likely than not that proceedings will result in the Group compensating third parties a provision is recognised for the best estimate of the amount expected to be paid. Where management considers that it is more likely than not that proceedings will not result in the Group compensating third parties or where, in rare circumstances, it is not considered possible to provide a sufficiently reliable estimate of the amount expected to be paid, no provision is made for any potential liability under the litigation but the circumstances and uncertainties involved are disclosed as contingent liabilities.

The assessment of the likely outcome of legal proceedings and the amount of any potential liability involves significant judgement. As law and regulations in many of the countries in which the Group operates are continuing to evolve, particularly in the areas of taxation, sub-soil rights and protection of the environment, uncertainties regarding litigation and regulation are greater than those typically found in countries with more developed legal and regulatory frameworks.

Provision for restoration and rehabilitation

The Group's accounting policy requires the recognition of provisions for the restoration and rehabilitation of each site when a legal or constructive obligation exists to dismantle the assets and restore the site. The provision recognised represents management's best estimate of the present value of the future costs required. Significant estimates and assumptions are made in determining the amount of restoration and rehabilitation provisions. Those estimates and assumptions deal with uncertainties such as: changes to the relevant legal and regulatory framework; the magnitude of possible contamination and the timing, extent and costs of required restoration and rehabilitation activity. These uncertainties may result in future actual expenditure differing from the amounts currently provided.

The provision recognised for each site is periodically reviewed and updated based on the facts and circumstances available at the time. Changes to the estimated future costs for operating sites are recognised in the statement of financial position by adjusting both the restoration and rehabilitation asset and provision. Such changes give rise to a change in future depreciation and interest charges. For closed sites, changes to estimated costs are recognised immediately in profit or loss.

Taxation

The Group's accounting policy for taxation requires management's judgement in assessing whether deferred tax assets and certain deferred tax liabilities are recognised on the statement of financial position. Deferred tax assets, including those arising from carried forward tax losses, capital losses and temporary differences, are recognised only where it is considered more likely than not that they will be recovered, which is dependent on the generation of sufficient future taxable profits. Deferred tax liabilities arising from temporary differences related to investments, caused principally by retained earnings held in foreign tax jurisdictions, are recognised unless repatriation of retained earnings can be controlled and is not expected to occur in the foreseeable future.

Assumptions about the generation of future taxable profits and repatriation of retained earnings depend on management's estimates of future cash flows. These depend on estimates of future production and sales volumes, commodity prices, reserves, operating costs, restoration and rehabilitation costs, capital expenditure, dividends and other capital management transactions. Assumptions are also required about the application of income tax legislation. These estimates and assumptions are subject to risk and uncertainty, hence there is a possibility that changes in circumstances will alter expectations, which may impact the amount of deferred tax assets and deferred tax liabilities recognised on the statement of financial position and the amount of other tax losses and temporary differences not yet recognised. In such circumstances, some or all of the carrying amount of recognised deferred tax assets and liabilities may require adjustment, resulting in a corresponding credit or charge to profit or loss.

The Group generally provides for current tax based on positions taken (or expected to be taken) in its tax returns. Where it is more likely than not that upon examination by the tax authorities of the positions taken by the Group additional tax will be payable, the Group provides for its best estimate of the amount expected to be paid (including any interest and/or penalties) as part of the tax charge.

Reserve estimates

Reserves are estimates of the amount of product that can be economically and legally extracted from the Group's properties. In order to calculate reserves, estimates and assumptions are required about a range of geological, technical and economic factors, including quantities, grades, production techniques, recovery rates, production costs, transport costs, commodity demand, commodity prices and exchange rates.

The Group determines ore reserves under the Australasian Code for Reporting of Mineral Resources and Ore Reserves September 1999, known as the JORC Code. The JORC Code requires the use of reasonable investment assumptions to calculate reserves.

Estimating the quantity and/or grade of reserves requires the size, shape and depth of ore bodies or fields to be determined by analysing geological data such as drilling samples. This process may require complex and difficult geological judgements and calculations to interpret the data.

Since economic assumptions used to estimate reserves change from period to period, and since additional geological data is generated during the course of operations, estimates of reserves may change from period to period.

Changes in reported reserves may affect the Group's financial results and financial position in a number of ways, including the following:

- Asset carrying values may be affected due to changes in estimated future cash flows;
- Depletion charged in profit or loss may change where such charges are determined by the units of production basis, or where the useful economic lives of assets change;
- Decommissioning, site restoration and environmental provisions may change where changes in estimated reserves affect expectations about the timing or cost of these activities.

Exploration and evaluation expenditure

The Group's accounting policy for exploration and evaluation expenditure results in certain items of expenditure being capitalised for an area of interest where it is considered likely to be recoverable by future exploitation or sale or where the activities have not reached a stage which permits a reasonable assessment of the existence of reserves. This policy requires management to make certain estimates and assumptions as to future events and circumstances, in particular whether an economically viable extraction operation can be established. Any such estimates and assumptions may change as new information becomes available. If, after having capitalised the expenditure under the policy, a judgement is made that recovery of the expenditure is unlikely, the relevant capitalised amount will be written off to profit or loss.

Development expenditure

Development activities commence after project sanctioning by the appropriate level of management. Judgement is applied by management in determining when a project has reached a stage at which economically recoverable reserves exist such that development may be sanctioned. In exercising this judgement, management is required to make certain estimates and assumptions similar to those described above for capitalised exploration and evaluation expenditure. Any such estimates and assumptions may change as new information becomes available. If, after having commenced the development activity, a judgement is made that a development asset is impaired, the appropriate amount will be written off to profit or loss.

Defined benefit retirement and other post retirement schemes

For defined benefit pension schemes, the cost of benefits charged to the profit or loss includes current and past service costs, interest costs on defined benefit obligations and the effect of any curtailments or settlements, net of expected returns on plan assets. An asset or liability is consequently recognised in the statement of financial position based on the present value of defined obligations, less any unrecognised past service costs and the fair value of plan assets.

The accounting policy requires management to make judgements as to the nature of benefits provided by each scheme and thereby determine the classification of each scheme. For defined benefit pension schemes, management is required to make annual estimates and assumptions about future returns on classes of scheme assets, future remuneration changes, employee attrition rates, administration costs, changes in benefits, inflation rates, exchange rates, life expectancy and expected remaining periods of service of employees. In making these estimates and assumptions, management considers advice provided by external advisers, such as actuaries. Where actual experience differs to these estimates, actuarial gains and losses are recognised directly in the statement of profit or loss and other comprehensive income.

Impairment of assets

The carrying amounts of the Group's non-financial assets, other than inventories and deferred tax assets, are reviewed at each reporting date to determine whether there is any indication of impairment. If any such indication exists then the asset's recoverable amount is estimated. For goodwill and intangible assets that are not yet available for use, the recoverable amount is estimated at each reporting date.

An impairment loss is recognised if the carrying amount of an asset or its cash-generating unit exceeds its recoverable amount. A cash-generating unit is the smallest identifiable asset group that generates cash flows that are largely independent from other asset groups. Impairment losses are recognised in profit or loss. Impairment losses recognised in respect of cash-generating units are allocated first to reduce the carrying amount of any goodwill allocated to the units and then to reduce the carrying amount of the other assets in the unit (group of units) on a pro rata basis.

The recoverable amount of an asset or cash-generating unit is the greater of its value in use and its fair value less costs to sell. 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 in respect of goodwill is not reversed. In respect of other assets, impairment losses recognised in prior periods are assessed at each reporting date for any indications that the loss has decreased or no longer exists. An impairment loss is reversed if there has been a change in the estimates used to determine the recoverable amount. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortisation, if no impairment loss had been recognised.

Goodwill that forms part of the carrying amount of an investment in an associate or a joint venture is not recognised separately and, therefore, is not tested for impairment separately. Instead, the entire amount of the investment is tested for impairment as a single asset when there is objective evidence that the investment in an associate or a joint venture may be impaired.

26. Significant subsidiaries

The significant entities of the Group, included in these consolidated financial statements, are as follows:

Name	Place of incorporation and operation	Principal activities	Ownership and equity interest 31 December 2022	2021
UC RUSAL				
United Company RUSAL IPJSC	Russian Federation	Holding company	56.9%	56.9%
Compagnie Des Bauxites De Kindia S.A.	Guinea	Bauxite mining	100.0%	100.0%
Friguia SA	Guinea	Alumina	100.0%	100.0%
JSC RUSAL Achinsk	Russian Federation	Alumina	100.0%	100.0%
Mykolaiv Alumina Refunery Company Ltd	Ukraine	Alumina	100.0%	100.0%
JSC RUSAL Boxitogorsk Alumina	Russian Federation	Alumina	100.0%	100.0%
Eurallumina SpA	Italy	Alumina	100.0%	100.0%
PJSC RUSAL Bratsk	Russian Federation	Smelting	100.0%	100.0%
JSC RUSAL Krasnoyarsk	Russian Federation	Smelting	100.0%	100.0%
JSC RUSAL Novokuznetsk	Russian Federation	Smelting	100.0%	100.0%
JSC RUSAL Sayanogorsk	Russian Federation	Smelting	100.0%	100.0%
LLC RUSAL RESAL	Russian Federation	Processing	100.0%	100.0%
JSC RUSAL SAYANAL	Russian Federation	Foil	100.0%	100.0%
CJSC RUSAL ARMENAL	Armenia	Foil	100.0%	100.0%
LLC RUS-Engineering	Russian Federation	Repairs and maintenance	100.0%	100.0%
JSC Russian Aluminium	Russian Federation	Holding company	100.0%	100.0%
Rusal Global Management B.V.	Netherlands	Management company	100.0%	100.0%
JSC United Company RUSAL Trading House	Russian Federation	Trading	100.0%	100.0%
RS International GmbH	Switzerland	Trading	100.0%	100.0%
Rusal Marketing GmbH	Switzerland	Trading	100.0%	100.0%
RTI Limited	Jersey	Trading	100.0%	100.0%
Alumina & Bauxite Company Limited	British Virgin Islands	Trading	100.0%	100.0%
JSC Bauxite-Timana	Russian Federation	Bauxite mining	100.0%	100.0%
JSC Severo-Uralsky Bauxite Mine	Russian Federation	Bauxite mining	100.0%	100.0%
JSC RUSAL URAL	Russian Federation	Primary aluminium and alumina production	100.0%	100.0%
LLC SUAL-PM	Russian Federation	Aluminium powders production	100.0%	100.0%
JSC Kremniy	Russian Federation	Silicon production	100.0%	100.0%
LLC RUSAL-Kremniy-Ural	Russian Federation	Silicon production	100.0%	100.0%
UC RUSAL Alumina Jamaica Limited	Jamaica	Alumina	100.0%	100.0%
Kubikenborg Aluminium AB	Sweden	Smelting	100.0%	100.0%
RFCL Limited (formerly RFCL S.ar.l)	Cyprus (formerly Luxembourg)	Finance services	100.0%	100.0%
ILLC AKTIVIUM	Russian Federation	Holding and investment company	100.0%	100.0%
Aughinish Alumina Ltd	Ireland	Alumina	100.0%	100.0%
LLC RUSAL Energo	Russian Federation	Electric power	100.0%	100.0%
Limerick Alumina Refining Ltd.	Ireland	Alumina	100.0%	100.0%
JSC RUSAL Management	Russian Federation	Management company	100.0%	100.0%
LLC RUSAL Taishet	Russian Federation	Smelting	100.0%	100.0%
LLC UC RUSAL Anode Plant	Russian Federation	Anodes	100.0%	100.0%
RUSAL Products GmbH	Switzerland	Trading	100.0%	100.0%
Casting and mechanical plant “SKAD” Ltd.	Russian Federation	Other aluminum production	75.0%	75.0%
LLC PGLZ	Russian Federation	Alumina	99.9%	99.9%
Power				
ILLC EN+ HOLDING	Russian Federation	Holding company	100.0%	100.0%
JSC EuroSibEnergo	Russian Federation	Management company	100.0%	100.0%
JSC Krasnoyarsk Hydro-Power Plant	Russian Federation	Power generation	100.0%	100.0%
LLC MAREM +	Russian Federation	Power trading	100.0%	100.0%
PJSC Irkutskenergo	Russian Federation	Power generation	100.0%	98.0%
OJSC Irkutsk Electric Grid Company	Russian Federation	Power transmission and distribution	53.8%	53.4%
LLC EuroSibEnergo – Hydrogeneration	Russian Federation	Power generation	100.0%	100.0%
LLC Avtozavodskaya TEC	Russian Federation	Power generation	100.0%	99.0%
LLC EuroSibEnergo-engineering	Russian Federation	Engineering services	100.0%	100.0%
LLC Kompaniya VostSibUgol	Russian Federation	Coal production	100.0%	98.0%
LLC Razrez Cheremkhovugol	Russian Federation	Coal production	100.0%	98.0%

The nominal ownerships indicated in the table above are the effective holdings, except for UC RUSAL shareholdings where 56.88% is held by the Parent Company.