Hydro

Annual report 2018

Hydro's reporting 2018

The enclosed Financial statements and Board of Directors' report, together with the accompanying notes, fulfills Hydro's Norwegian statutory requirements for annual reporting. The remainder of the Annual Report includes additional information about Hydro's business, viability performance, financial and operating performance, shareholder information and corporate governance.

The "Annual report - 2018" is available in PDF-format on our website www.hydro.com/reporting2018 in English. The "Financial statements and Board of Directors' report - 2018" is also available in PDF-format as a separate document in both English and Norwegian. All parts of the reports can be downloaded and printed in PDF-format, together with additional, supplementary information. Paper copies of the reports can also be ordered on our website.

Throughout the report, Hydro refers to Norsk Hydro ASA and its consolidated subsidiaries if not otherwise stated.

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Content

12 Board of Directors' report

Hydro's Board of Directors' report for 2018 is prepared in accordance with the Norwegian Accounting Act.

33 Business description

Detailed strategy and operating information are provided for each of Hydro's business areas including an overview of industry developments. Key regulatory and taxation information are also included.

71 The Alunorte situation

The section describes the events and actions following the flooding in the Barcarena region in Brazil in February 2018.

77 Viability performance

The section describes our materiality analysis, policy, strategy and main results within environmental and social topics as well as innovation and design thinking.

102 Financial and operating performance

Financial and operating results are discussed per business area, as well as the market development and outlook. Additional factors impacting Hydro and financial income (expense) and income tax are discussed for the Hydro group as well as disclosures covering liquidity and capital resources, and return on capital.

120 Risk review

Hydro's major risks, with mitigating actions, are described in this section, including financial position, key financial exposures and legal proceedings.

129 Shareholder information

Shareholder information includes share price development, dividend policy, funding and credit rating policy, the Annual General Meeting and the financial calendar for 2018.

134 Corporate governance

Hydro's corporate governance practice is described in relation to regulatory compliance, corporate directives, code of conduct and governance bodies.

143 Financial statements

Hydro's consolidated financial statements prepared in accordance with International Financial Reporting Standards (IFRS) are provided, together with the financial statements for the parent company Norsk Hydro ASA prepared in accordance with Norwegian accounting principles.

229 Viability performance statements

The environmental statements include key information about Hydro's environmental performance. The social statements include key information related to Hydro's workforce and interaction with the societies we are part of.

271 Appendices to the Board of Directors' report

Information under the Board of Directors' formal responsibility and exceeding the requirements of the Board of Directors' report includes Alternative Performance Measures; Country by country report; Norwegian code of practice for corporate governance; and Modern slavery transparency statement.

301 Additional information

Terms and definitions.

Year in brief

2018 Operating results impacted by reduced upstream volumes and higher raw material costs, partly offset by higher realized prices.

Hydro's underlying EBIT decreased to NOK 9,069 million from NOK 11,215 million for 2017. The decrease reflects negative effects relating to the production curtailment at Alunorte and increased raw material costs partly offset by a higher all-in metal price and alumina sales price as well as the positive contribution from the full consolidation of Extruded Solutions. Further, the result was positively impacted by strong Energy results and improved downstream margins and volumes.

Bauxite production in Paragominas amounted to 6.2 million mt for the year while alumina production from Alunorte was 3.7 million mt. Primary aluminium production was about 2.0 million mt and we delivered 2.6 million mt of casthouse products and liquid metal to internal and external customers. Downstream, we shipped roughly 1 million mt of rolled products to the market. Extruded Solutions business area delivered around 1.4 million mt. Our energy business produced around 10.7 TWh of hydroelectric power

■ Hydro present

Based in Norway, Hydro has 36,000 employees involved in activities in 40 countries.

Key figures

Amounts in NOK million unless other unit indicated	**2018**	2017	2016
Revenue	**159,377**	109,220	81,953
Underlying EBIT [a)]			
Bauxite & Alumina	**2,282**	3,704	1,227
Primary Metal	**1,762**	5,061	2,258
Metal Markets	**686**	544	510
Rolled Products	**413**	380	708
Extruded Solutions	**2,390**	284	
Energy	**1,846**	1,531	1,343
Other and eliminations	**(310)**	(289)	380
Total	**9,069**	11,215	6,425
Net Income	**4,323**	9,184	6,586
Underlying return on average capital employed (RoaCE), percent	**6.5%**	9.6%	5.1%
Investments	**7,614**	28,848	9,137
Total assets	**161,855**	163,273	130,793
Share price year-end, NOK	**39.21**	62.35	41.30
Dividend per share, NOK	**1.25**	1.75	1.25
Number of employees, year-end	**36,236**	34,625	12,911
Recordable injuries, per million hours worked [b)]	**3.4**	2.9	2.6
Greenhouse gas emissions, million tonnes CO2e [c)]	**6.5**	8.2	8.2

a) Underlying EBIT
Reflecting negative effects relating to the production curtailment at Alunorte. Partly offset by positive contributions from the full consolidation of Extruded Solutions, Energy results and improved downstream margins and volumes.

b) Safety performance
Hydro's safety performance weakened in 2018, and we experienced one fatal accident. The company's TRI[1] rate increased from 2.9 in 2017 to 3.4 in 2018 and did not meet the target of 3.0.

c) Greenhouse gas emissions
Direct greenhouse gas emissions from Hydro's consolidated activities decreased in 2018 due to the embargo at Alunorte and curtailment at Albras and Paragominas.

Hydro and the UN Sustainable development goals

The UN Sustainable Development Goals (SDGs) embrace a universal approach to the sustainable development agenda. They explicitly call on business to use creativity and innovation to address development challenges and recognize the need for governments to encourage sustainability reporting. Hydro has an impact on all of the 17 development goals, but some more than others. Of the 17, Hydro has chosen eight goals that are the most important to us, that are highlighted throughout the report.

Improving our footprint

Making a positive difference

Driving innovation

Hydro's value chain

* Included as part of the relevant topics in the more extensive risk description (see further references below).
For a more extensive and precise overview of Hydro's main risks, see page 21and 120.
Text in italics reflects mainly negative impacts.

Hydro's mid-term strategic goals

	Ambitions	Target	Timeframe	2018 progress	Status
Better	Improve safety performance, strive for injury free environment	TRI<2[1)]	2020	3.4[2)]	●
	Realize ongoing improvement efforts Better	BNOK 3.0	2019	BNOK (0.6)	●
	Secure new competitive sourcing contracts in Norway post 2020	4-6 TWh	2020	4.8 TWh, completed[3)]	●
	Lift bauxite production at Paragominas	11.0 mill mt/year	2018	6.2 mill mt/year	●
	Lift alumina production at Alunorte	7.0 mill mt/year	2021	3.7 mill mt/year	●
	Shift alumina sales to PAX-based pricing	>85% PAX[4)]	2020	75-80% PAX[5)]	●
	Extend technology lead with Karmøy technology pilot	Start production	2H 2017	29-Jan-18	●
	Extend technology lead with Karmøy technology pilot	Full ramp-up	Q2 2018	27-Jun-18	●
Bigger	Realize technology-driven smelter capacity creep	200,000 mt/yr	2025	35,000 mt/yr	●
	Increase nominal automotive Body-in-White capacity	200,000 mt/year	2017[6)]	Ramping up, qualifications ongoing	●
	Complete ramp-up of UBC recycling line	>40,000 mt/year	2017[6)]	Delayed to Q4 2019	●
Greener	Become carbon-neutral from a life-cycle perspective	Zero	2020	On track	●
	Increase recycling of post-consumer scrap	>250,000 mt/yr[7)]	2020	161,000 mt/yr	●
	Deliver on reforestation ambition	1:1	Continuous	On track[8)]	●

1) TRI, total recordable injuries per million hours worked, includes own employees and contractors
2) The safety development in 2018 includes one fatality
3) 2.2 TWh power sourcing in 2018
4) Based on annual sourced volumes of 2.3 million mt/yr
5) Based on sourcing volume of ~ 3.5 million mt for 2018
6) 2017 target not met
7) While we based on a commercial evaluation see that the recycling target originally set for 250,000 mt/year of post-consumer scrap by 2020 will not be met, we continue to develop recycling capacity that can be used for post-consumer scrap as well as for process scrap.
8) 1:1 rehabilitation of areas available for rehabilitation within two hydrological seasons after release. Revised definition of target takes into account the nature of the mining cycle and the time lag necessary to ensure quality rehabilitation to restore biodiversity

Green light: Ambition on track and on target; Amber light: Ambition behind plan, but on target; Red light: Ambition might not meet the medium-term target

Lessons learned, building for the future

In our first year as a fully integrated and truly global aluminium company, we showed encouraging progress in designing, developing and delivering aluminium products and solutions worldwide. But 2018 was also heavily affected by the production embargo at our alumina refinery Alunorte in Brazil.

2018 was the year our new business area Extruded Solutions was financially and operationally fully integrated in our now 36,000-strong Hydro family. It has added competence, assets and customers in key downstream segments across all continents, in line with our ambition to become a better, bigger and greener company.

The Karmøy technology pilot has been ramped up to produce the world's most climate and energy-efficient primary aluminium, we have decided to upgrade the Husnes plant, delivered better results from remelters, secured future renewable power sourcing, invested in selective downstream projects such as extrusion capacity for the US automotive market and improved performance at the new automotive line in Germany.

At the same time, 2018 stands out as the most demanding year for me as president and CEO of Hydro. We have learned from the Alunorte situation – both with regards to our operational activities inside the fence of Alunorte, as well as how local communities surrounding our operations regard us as a neighbor. Through dialog with our local communities, we realize that we had not lived up to their expectations or our own ambitions. Hydro can only succeed as a company if the societies around us are viable.

The Alunorte situation

The impact of the rainfall event in Barcarena, Brazil, in February 2018, has been thoroughly investigated through public agencies, professional reports from internal and independent third-party as well as public hearings. Environmental authorities have confirmed that there were no leaks or overflow from Alunorte's bauxite residue deposits.

However, we did recognize a need to strengthen the robustness of the plant, and we have increased water treatment capacity to prepare the plant for future climate and weather changes. Our clear ambition is to make Alunorte the benchmark in our industry, ensuring sustainable operations and social development in the communities around us.

Technical and social agreements with the authorities with clear commitments have been negotiated and concluded, and in addition we have promised to invest in social projects and capacity building through the Sustainable Barcarena Initiative over the next 10 years.

We have concluded a broad climate risk and impact assessment of Hydro plants worldwide, as part of our measures to increase resilience toward future effects of climate change.

Better, Bigger, Greener

The curtailment at Alunorte has weakened our financial results and progress of our improvement program. In addition, different tariffs and sanctions have influenced global markets and trade flows over the past year, also affecting our industry.

But as the metal of the future continues to find its way into new applications, demand growth remains firm and future prospects look promising.

More and more of our aluminium is used in automotive applications, light-weighting transportation and reducing carbon emissions in the user phase. Hydro has become one of the world's leading suppliers of building systems, including energy-efficient roofs, façades and windows solutions. We delivered our first physical metal in the series Hydro 4.0 and Hydro 75R, with a documented low-carbon footprint and record-high recycled content of post-consumer scrap. Our revised Hydro Way and visual identity have been well received internally and externally, boosted internal engagement and collaboration and given Hydro a unified face and voice toward our 30,000 customers worldwide.

We continue our efforts to solve equipment design issues that have delayed the ramp-up of the new Used Beverage Can (UBC) recycling line in Germany. We are also dealing with increased raw material costs and some reduced margins that are offsetting improvements, including restructuring costs at our two recently acquired extrusion plants in Brazil.

Aluminium is a key building block for the low-carbon, circular economy. A brand new fully-electric car ferry to service a 12.5-kilometre fjord crossing in western Norway can serve as an example of the potential for new solutions. Hydro has delivered the rolled and extruded aluminium

necessary to lightweight the ferry to enable its electric operations. And we have indirectly taken part in delivering the 3 MWh battery pack that powers the vessel through our 25 percent stake in Corvus Energy. I am convinced that the world will need – and soon will see – more of this kind of innovative and greener transport solutions, enabled by aluminium.

Care, Courage, Collaboration

We marked our new chapter by modernizing our values. We are still the same purpose-driven company aiming to create a more viable society, and our contribution is to help engineer the future and lightweight our planet through innovative and sustainable aluminium products and solutions. We aspire to become better, bigger and greener through continuous improvement of existing operations, selective growth and expansion, and setting new standards within the global aluminium industry. And the values Care, Courage and Collaboration are our guidelines for the way we work to achieve it.

Our performance on safety in 2018 missed our targets. It was with great sorrow that I got the news that an employee of a contracting company died while working for Hydro, at Extruded Solutions in Hungary, in November 2018. At the same time, 77 of our sites were injury-free in 2018, demonstrating that half of all our production facilities don't just believe that zero is possible – they are doing it and leading the way.

The difference between injury free and a serious injury can often be measured in millimeters, or in milliseconds. We must improve our abilities by learning from all incidents, share our learning from our best practices and best-performing colleagues, focus on prevention of fatalities and serious injuries – and always strive to make our workplace safer.

Our employees are by far Hydro's most important asset, and I would like to extend my gratitude to all our 36,000 engaged employees for solving challenges and seizing opportunities and making Hydro perform and improve.

Being engaged in the entire aluminium value chain provides advantages that are unmatched by our global peers. By tracking each step along the way, we are able to document and be transparent about our sustainability practices. As part of taking responsibility, and to contribute to sustainable development, we have taken part in developing the standards of the Aluminium Stewardship Initiative. The first Hydro plants have already received certification, and we are on track with our plan to achieve certification along the entire aluminium value chain from mine to recycling in the coming months.

Hydro is a signatory to the UN Global Compact and the Task force on Climate-related Financial Disclosure (TCFD). Hydro was a co-founder of the World Business Council for Sustainable Development, and a member of the International Council on Mining and Metals (ICMM). Hydro became aluminium sector leader in 2018 on the Dow Jones Sustainability Indices and is included in the UN Global Compact 100 and the FTSE4Good list.

Technology and sustainability

If the global climate challenge is our biggest challenge, technological advancement is our greatest opportunity.

We are pushing the laws of nature to achieve more energy-efficient electrolysis. We utilize digitalization, big data and artificial intelligence to optimize and automate processes. We tailor-make specific aluminium properties on the atomic level to innovate new products and solutions that reduces emissions in the user phase.

In short, by bringing to life the unique qualities of aluminium, we address both the greatest threat and opportunity of our time.

Svein Richard Brandtzæg
CEO and President

Board and Management

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Chair

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Deputy chair

Arve Baade

Finn Jebsen

Liselott Kilaas

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Anne-Lene Midseim

Arvid Moss

Hilde Vestheim Nordh

Inger Sethov

John Thuestad

Hilde Merete Aasheim

1) Reports directly to President and CEO but not as EVP and formal member of the CMB
2) Moss has also responsibility for Projects, Corporate Climate Office and Corporate Business Development

Board of Directors' report

13 Strategic direction and key developments
17 Investor information
18 Financial results
20 Market developments and outlook
21 Risk review
24 Compliance, controls and procedures
24 Research and development
25 Society
26 Environment
29 People
31 Board developments
32 Net income and dividend - Norsk Hydro ASA

Quick overview

Following the acquisition and ongoing successful integration of Extruded Solutions, Hydro remains committed to its strategy to improve and grow along the full aluminium value chain, underpinned by firm demand for the world's fastest growing base metal.

Hydro has strong positions throughout the value chain and an attractive asset base. This includes competitive positions in bauxite and alumina, hydropower production, and our smelter portfolio, European leader in rolling operations, strong position in recycling and a world leading position in extruded solutions. Through continuous improvement, restructuring efforts and selective investments in areas with positive market prospects, Hydro has improved its competitive position over recent years.

The continued production curtailment in Alunorte contributed to a challenging year for Hydro. Hydro has been in dialogue with all relevant authorities, at the local, regional and national level in Brazil. We continue to seek a common agreed solution to resume operations, using the new and modern deposit area and the state-of-the-art press filters. The timing of a full resumption of operations remains uncertain.

Mainly due to the situation in Alunorte, Hydro will not be able to deliver on its Better program with improvements of a total NOK 3.0 billion over a four-year period until end-2019. Much because of the same reason, Hydro has not been able to stay on course for several of its mid-term goals.

Strategic direction and key developments

Navigating challenging times, maintaining long-term focus
Following the acquisition and ongoing successful integration of Extruded Solutions, Hydro remains committed to its strategy to improve and grow along the full aluminum value chain, underpinned by firm demand for the world's fastest growing base metal. The continued production curtailment in Alunorte contributed to a challenging year for Hydro. The process to restore normal production at Alunorte is ongoing but the timing of a solution remains uncertain. The Alunorte situation is described in further detail later in this section.

Strong position in an industry with growing demand
Hydro has strong positions throughout the value chain and an attractive asset base.

This includes:
- First quartile cost position for the integrated Alunorte refinery and Paragominas bauxite mine, long-term access to key raw materials for aluminium production
- 10TWh hydropower production in Norway at competitive production cost, secure and stable energy source for aluminium production
- Low second-quartile cost position for primary smelter portfolio, technological leadership through Karmøy technology pilot and more than 80 percent share of value-added metal products
- European leader in rolling operations, increasing exposure to high-margin market segments including automotive
- World's largest extruded solutions provider, market leader in North America and Europe
- Strong and growing position in recycling, both post-consumer and process scrap

Hydro has improved its competitive position over recent years, through continuous improvement, restructuring efforts and selective investments in areas with positive market prospects.

Growth in aluminium demand remains firm, growing in line with GDP development. Aluminium demand is driven both by a general increase in consumption and the increasing substitution to aluminium from other materials. Aluminium products are important in all phases of economic development due to the diversified nature of applications such as capital investment in infrastructure and housing as well as consumer goods such as packaging, transportation, electrical and technical applications and household goods.

Substitution effects are driving demand primarily in the transportation sector, driven by the need to improve fuel efficiency and reduce energy use through lighter cars, trains and trucks. Additionally, aluminium is key to zero-energy buildings, solar applications and packaging that preserves food and demands less energy to transport. Around 70 percent of Hydro's primary production is based on renewable energy which, together with the use-phase benefits of aluminium and the recyclability of the metal, combine to reduce the carbon footprint of products and solutions.

Hydro is focusing on improving productivity and output for the upstream portfolio through de-bottlenecking, digitalization and automation. The Karmøy technology pilot is now operating at full capacity. Although still in a qualification phase, the Karmøy Technology Pilot is producing the world's most climate and energy-efficient primary aluminium. The pilot plant is verifying a broad range of technical innovations that will provide spin-off effects to Hydro's smelter portfolio, helping to increase efficiency and reduce the climate footprint of Hydro's production of primary aluminium.

We apply new technology and have developed processes to combine clean scrap with post-consumer scrap, and we are investing in existing remelters to increase our post-consumer scrap capacity. Hydro's low carbon 75R billet has a guaranteed minimum postconsumer scrap content of 75 percent.

Extruded Solutions will continue to pursue its value over volume strategy and consider investments and acquisitions to strengthen its position in specific segments or markets. Rolled Products will continue to focus on high-margin market segments with the ramp-up of its Automotive line 3 (AL3), while it has initiated a restructuring of its less profitable foil business. Energy's ambition is to continually increase Hydro's share of captive power from renewable sources, and further explore opportunities within our existing concession areas in Norway. Our ongoing Fit4Future program, aims at step-change improvements to lift staff value creation and lower costs.

In Norway, about two-thirds of our normal annual hydropower production is subject to concessions granted at the time the waterfall rights were acquired. Such power plants operate under concession terms of the Norwegian state reversion, with individual concessions expiring in two main parts around 2022 and 2050. Hydro is working on different restructuring alternatives within the regulatory framework to secure future access to physical power and maintain value beyond 2022.

Climate, health, safety, security and environment (HSE), corporate social responsibility (CSR), and complying with laws, regulations, and Hydro's steering documents, is fundamental to Hydro's way of working and are considered key elements of the company's license to operate. Hydro is on track to becoming carbon-neutral from a life-cycle perspective by 2020. Hydro has been involved at all stages in the multi-stakeholder development of the Aluminium Stewardship Initiative's (ASI) standards and certified its first extrusion plant in 2018 and first rolling mill during the first quarter of 2019. Several other plants, representing the complete value chain, are under certification.

Creating value by becoming Better, Bigger and Greener
Hydro's strategic business approach aims to add value to our customers, shareholders and society. This approach is reflected in Hydro's mid-term strategic goals reflecting the company's aspiration to become Better, Bigger, Greener.

Hydro will become Better by raising performance and

improving our customer offering. This will be achieved by extending Hydro's leadership in advanced technology and product innovation, creating value through raw materials access, customer collaboration and our integrated model, continual improvements and continuing to benchmark performance and ensuring attractive returns over the cycle.

To become Bigger, Hydro will aim to expand the use of aluminium and strengthen Hydro's platform for growth. This will be achieved by the promotion of Hydro and aluminium through value-adding products and solutions for our customers. We aim to be the preferred and trusted partner, and the most trusted voice of the aluminium industry. Hydro pursues selective growth from raw materials to products, solutions and recycling.

Hydro believes that leading the transition towards sustainable solutions will make the company Greener, in addition to improving the company's ability to create shareholder value while making a positive difference wherever it operates. Hydro advocates aluminium as a building block for the low-carbon circular economy, continue to reduce its environmental footprint from own production and solutions, and to make a positive difference by strengthening local communities and our business partners.

2018 Developments

The production curtailment at Alunorte posed a continuous challenge throughout the year and impacted a large part of operations and performance. The Alunorte situation is described in further detail later in this section.

Hydro's underlying EBIT for the year 2018 was NOK 9.1 billion, down from NOK 11.2 billion in the previous year. The decrease reflects negative effects relating to the production curtailment at Alunorte and increased raw material costs, partly offset by a higher all-in metal price and alumina sales price as well as the positive contribution from the full consolidation of Extruded Solutions. Further, the result was positively impacted by strong Energy results and improved downstream margins and volumes.

Despite the Alunorte situation, we shall continue to focus on our continuous improvement efforts and the pursuit of our strategic goals.

We see many examples of strong performance throughout the company, such as the successful construction and ramp-up of the Karmøy technology pilot in Norway, Extruded Solutions continued to build on its strategy of value over volume while Energy entered into several long term power purchase contracts with wind power producers in Norway and Sweden. Further, the integration of Extruded Solutions is on track to deliver NOK 200 million in synergies, with more than NOK 100 million realized in 2018. In addition, good progress has been made with product qualification on the new automotive line in Germany.

However, mainly due to the situation in Alunorte, Hydro will not be able to deliver on its *Better* program with improvements of a total NOK 3.0 billion over a four-year period ending 2019. The accumulated achieved improvement at the end of 2018 is negative NOK 0.6 billion, implying a negative development of NOK 2.4 billion in 2018. Hydro's ability to reach the program's target depends on when the Alunorte situation will be solved. Primarily for the same reason, Hydro has not been able to stay on course for several of its mid-term goals.

Hydro's safety performance weakened in 2018, and we experienced one fatal accident. The company's TRI[1] rate increased from 2.9 in 2017 to 3.4 in 2018 and did not meet the 2018 target of below 3.0. Even though the high-risk incidents rate improved, the development is concerning. All business areas are active in identifying safety risks, and our performance indicator, the risk KPI, remains an important leading indicator helping monitor and manage processes and tasks with high inherent risks.

Primary Metal is utilizing technology and innovation to differentiate in the highly competitive environment of primary aluminium production. The 75,000 mt technology pilot at Karmøy started production in January 2018 and reached full production in June 2018, marking the start of verifying the world's most climate- and energy-efficient smelter technology with spin-off effects for Hydro's existing smelter portfolio.

Hydro has made a final build decision to invest NOK 1.4 billion at the aluminium plant in Husnes, Norway, to upgrade and start-up the plant's second production line, which was shut down in 2009. Hydro will introduce new technology elements from the Karmøy technology pilot that will give better performance at the plant. The line is expected to begin operations in the first half of 2020.

Recycling is an important element supporting Hydro's ambition to become carbon-neutral by 2020. During 2018 the company continued developing and investing in recycling capacity and solutions including expanding the Azuqueca remelter, upgrading the Lucé remelter, and increasing production of the low carbon 75R billet.

Rolled Products has ramped up Automotive line 3 (AL3) and has made good progress with the product qualifications. The used beverage can (UBC) recycling line has encountered further delays during the ramp-up and as a result are targeting full production by the end of 2019. Further, Rolled Products experienced increasing costs and weakening demand in some of the product segments and initiated a restructuring of its foil business.

Extruded Solutions continued its strategy of increasing the share of value-added sales, and a simplification and collaboration drive for continued improvement. On April 2, 2018 the acquisition of Arconic's two extrusion plants in Brazil was completed, strengthening Hydro's downstream position in Brazil and creating a solid platform for further growth. Extruded Solutions has made an investment decision to build a new extrusion press in Cressona, the press will have high-performance capabilities primarily targeted to meet the needs of the growing automotive market in North America. Building Systems are offering our first window systems made from Hydro's 75R recycled aluminium.

[1] Total recordable injuries per million hours worked, includes employees and contractors

Hydro Extrusion Portland, Inc. (formerly Sapa Profiles, Inc.) (SPI), a Portland, Oregon-based indirect subsidiary of Hydro Extruded Solutions AS (formerly Sapa AS) (Hydro) is under investigation by the United States Department of Justice (DOJ) Civil and Criminal Divisions regarding certain aluminum extrusions that SPI manufactured from 1996 to 2015, including extrusions that were delivered to a supplier to NASA. In early March 2019, the parties reached an agreement in principle, requiring Hydro to pay an amount of around NOK 400 million to resolve the investigations. As part of the share purchase agreement between Hydro and Orkla ASA, the parties have agreed that Orkla ASA shall indemnify Hydro for 50 percent of any liability in relation to DOJ's investigations.

Securing long-term competitive power sourcing is of critical importance to sustain the viability of Hydro's smelter portfolio. In 2018, Hydro entered into four contracts for long-term renewable power sourcing. Total energy contracted between 2021 and 2030 is 2.2 TWh annually and these contracts will contribute to strengthen Hydro's renewable power base in Norway.

Following the production embargo at the Alunorte refinery, the World ex-China alumina market fell into deficit in 2018. The shortfall was balanced by Chinese alumina exports, which was unprecedented, as China has historically been an importer of alumina. Demand for bauxite imports into China continued to grow, driven by an increase in alumina production by coastal refineries reliant on imported bauxite, as well as tightness of the domestic bauxite market. The increased demand was largely met by the continued strong growth in imports from Guinea, along with moderate growth from Australian mines.

Global demand growth for primary aluminium in 2018 reflected positive macroeconomic developments. Global supply development throughout the year fell somewhat short of expectations, resulting in an overall market deficit. Primary production growth in China was close to flat year-on-year in 2018, reflecting environmental and supply-side reforms resulting in cutbacks of illegal capacity. Towards end of year, there have been curtailments and announcements of significant capacity closures of Chinese smelters due to deteriorating competitiveness. Strong demand continued across all downstream segments in line with macro development. Due to substitution into aluminium in transportation and electrical in particular, demand growth in these sectors was higher than for other more GDP driven segments. 2018 was also influenced by continued market uncertainty driven by the US administration imposing import tariffs on aluminium, Rusal sanctions and the Alunorte situation.

The Alunorte situation

In February 2018 the region of Barcarena in northern Brazil suffered from flooding following two days of extreme rainfall. The areas flooded included Hydro's Alunorte alumina refinery. Brazilian authorities and local communities were concerned that flooding might have led to harmful spills into the surrounding areas. The authorities ordered several measures against Alunorte while reviewing the situation. The measures restricted the production at the refinery to 50 percent of its capacity. Consequently, Alunorte's primary bauxite source Paragominas and Hydro's part-owned subsidiary Albras aluminium plant, both in the state of Pará, reduced their production by 50 percent.

More than 90 investigations and inspections were conducted by the relevant authorities, including the environmental agency in the state of Pará, Semas, and the federal environmental agency, Ibama. Semas and Ibama have both confirmed that there was no overflow from Alunorte's bauxite residue deposits. Reports concluded there was no indication or evidence of contamination to nearby local communities, nor any significant or lasting environmental impact to nearby rivers from Alunorte as a result of the extreme rainfall.

In addition to the production restriction at Alunorte, an embargo was enforced by the authorities on the press filters and on the new bauxite residue deposit area (DRS2) which were under commissioning. Using DRS2 in combination with new state-of-the art press filters is the only viable long-term solution for Alunorte to dispose bauxite residue. The current bauxite residue deposit area (DRS1), has an estimated remaining capacity of around 12-18 months based on volume of bauxite residue processed by the press filters. Subject to further geotechnical verifications, the DRS1 remaining capacity might be extended beyond this horizon. The timing depends on both actual production volumes from Alunorte and DRS1's final regulated capacity.

In October 2018 the embargo previously imposed by Ibama on DRS2 and the press filters was suspended. On January 15, 2019 Semas issued a technical opinion confirming that Alunorte can operate safely at its installed capacity in respect of effluent treatment.

At the time of authorising this report, the production embargoes on Alunorte as well as the embargoes on DRS2 by the Federal Court, both civil and criminal, remain in force. The timing with regards to when the embargoes may be lifted remains uncertain. Once the embargoes are lifted, it is expected to take around 2 months to reach 75-85 percent of Alunorte's nameplate production capacity. The timing of a return to full production capacity at Alunorte depends on the commissioning process of DRS2 and the press filters.

On September 5, 2018, Alunorte signed two agreements with the government of Pará and Ministerio Público representing an important step towards resuming normal operations. The agreements regulate certain technical improvements, audits, fines, studies as well as additional investments related to the social development of communities in Barcarena. The combined investments, costs and fines are estimated at BRL 360 million (around NOK 750 million). See note 35 to the consolidated financial statements for more information.

In response to the flooding in the area, Alunorte has expanded its voluntary social measures for communities close to the refinery. Alunorte continues to support the communities with immediate needs for water supply and health services and has committed to contribute to long-term improvements. To support broad collaboration for social change in Barcarena, Alunorte has committed BRL 100 million (around NOK 200 million) over 10 years in local community investments through the Sustainable Barcarena Initiative. The initiative is establishing an independent organization, bringing stakeholders together to discuss, prioritize and decide on critical issues in Barcarena, reduce

conflict level, and strengthen the ability of local actors to drive social change and development in Barcarena.

Hydro has initiated several investments related to the wastewater handling and treatment systems at Alunorte, totaling 675 MBRL (around NOK 1.5 billion). These aim at increasing the wastewater treatment capacity by 50 percent and the water reservoir capacity by 350 percent as well as strengthening the infrastructure related to the water management system and enhancing robustness and flexibility of the system.

Hydro is in dialogue with all relevant authorities, at the local, regional and national level in Brazil. We continue to seek a common agreed solution to resume operations, using the new and modern deposit area and the state-of-the-art press filters.

Following Vale's Brumadinho accident in Brazil in January 2019, we are reviewing our tailings management system to ensure we can continue to operate safely. The tailings dams at Paragominas are built using mainly downstream elevation which provide high structural integrity and safety. At one dam, however, there is one section using centerline elevation. This section is part of the top elevation which is one meter high. The material stored in our dams is also of a much higher final solids content (55-60 percent). Hydro is closely monitoring and analyzing the impact on the industry, including potential regulatory, political and societal implications on the back of the Brumadinho incident. Safe operations in compliance with regulatory requirements is crucial for Hydro. The Paragominas dams are stable and regularly monitored and audited by external experts. The dams meet all parameters of current environmental and mining legislation.

Hydro is also a 5 percent shareholder in Mineração Rio do Norte (MRN), where the tailings disposal process is designed to allow tailings to achieve a final solids content similar to that of Paragominas. MRN is the operator of the mine and is responsible for the management of its tailings system. Hydro works with MRN and the other shareholders through the board of directors and relevant technical committees to require the safe operation of MRN's tailings ponds in accordance with applicable laws and standards.

Priorities for 2019

Going forward, Hydro aims to strengthen performance, drive value creation and strengthen its relative industry position. Priorities in 2019 include:

Strengthen performance within health, safety, security and environment (HSE), corporate social responsibility (CSR) and compliance

Our approach to improve our occupational health, safety and security performance will continue in 2019, including by deploying a fatality prevention program across all business areas, as well as identify and share best practices more effectively. The enhanced compliance system of Hydro, including financial and non-financial compliance, was initiated in 2018. From 2019 an integrity index will be embedded in Hydro's employee engagement survey. Our prioritized areas for CSR will be further developed in 2019: To contribute to long-term societal development through quality education; decent work and economic growth; and promotion of peaceful and inclusive societies.

Resolving the Alunorte situation

At the time of authorising this report, both the production embargo on Alunorte as well as the embargoes on DRS2 by the Federal Court remain in force. The situation at Alunorte impacts large parts of our operations, our key stakeholders and our financial performance. Several steps have been taken to lay a platform that will facilitate bringing Alunorte back to normal operations, however the timing of a full resumption of operations remains uncertain. Resolving the situation is a key priority for 2019.

Continued successful integration of Extruded Solutions

A successful integration of Extruded Solutions and its 22,000 employees into Hydro's operating model has been priority for 2018 and will continue in 2019. Further synergy potentials are being developed, including innovation, research and development. Given Hydro's long value chain, spanning both upstream and downstream from bauxite extraction to products, solutions and recycling, the operating model offers a high degree of flexibility. This ensures that the business areas can be managed according to the specific business drivers and challenges of each area**.**

Strengthen relative industry position through continuous improvement, innovation and sustainability

During 2019, Hydro will continue with its improvement drive. Bauxite & Alumina will continue its work on developing the technical concept for the replacement of part of the fuel oil consumption at the Alunorte alumina refinery to more climate and cost efficient natural gas. Harvesting spin-off effects from the technology pilot at Karmøy is expected to contribute further to reducing energy costs and lowering greenhouse gas emissions. Hydro will continue to implement digital solutions to improve our profitability, commercial edge, safety and CO2 footprint. The uncertainty related to the Alunorte situation and the timing of the lift of the embargo will impact improvement potentials in the upstream operations. We will continue to lift staff value creation and lower costs with our ongoing Fit4Future program.

Continue shifting portfolio towards high-margin segments for leading customers

Our ambition is to increase margins and profitability through high-grading our product portfolio and differentiation through innovation, quality and customer orientation. Extruded Solutions will continue to build on the value-over-volume strategy aiming on delivering a minimum 10 percent average underlying EBIT growth over the next 3 years.

Maintain financial strength and flexibility, and provide attractive returns over the business cycle

Hydro aims to provide its shareholders with competitive returns compared to alternative investments in peer companies by lifting the operating cash flow generation potential in all of its business areas. The company will continue to focus on securing its financial position through exercising strong capital discipline while maintaining a sustainable level of capital expenditures to safeguard its operating portfolio. Offering a dividend of 40 percent of reported net income over the cycle, with NOK 1.25 per share considered a floor, and preserving Hydro's investment grade credit rating continue to be key priorities.

Hydro's mid-term strategic goals

	Ambitions	Target	Timeframe	2018 progress	Status
Better	Improve safety performance, strive for injury free environment	TRI<2[1)]	2020	3.4[2)]	●
	Realize ongoing improvement efforts Better	BNOK 3.0	2019	BNOK (0.6)	●
	Secure new competitive sourcing contracts in Norway post 2020	4-6 TWh	2020	4.8 TWh, completed[3)]	●
	Lift bauxite production at Paragominas	11.0 mill mt/year	2018	6.2 mill mt/year	●
	Lift alumina production at Alunorte	7.0 mill mt/year	2021	3.7 mill mt/year	●
	Shift alumina sales to PAX-based pricing	>85% PAX[4)]	2020	75-80% PAX[5)]	●
	Extend technology lead with Karmøy technology pilot	Start production	2H 2017	29-Jan-18	●
	Extend technology lead with Karmøy technology pilot	Full ramp-up	Q2 2018	27-Jun-18	●
Bigger	Realize technology-driven smelter capacity creep	200,000 mt/yr	2025	35,000 mt/yr	●
	Increase nominal automotive Body-in-White capacity	200,000 mt/year	2017[6)]	Ramping up, qualifications ongoing	●
	Complete ramp-up of UBC recycling line	>40,000 mt/year	2017[6)]	Delayed to Q4 2019	●
Greener	Become carbon-neutral from a life-cycle perspective	Zero	2020	On track	●
	Increase recycling of post-consumer scrap	>250,000 mt/yr[7)]	2020	161,000 mt/yr	●
	Deliver on reforestation ambition	1:1	Continuous	On track[8)]	●

1) TRI, total recordable injuries per million hours worked, includes own employees and contractors
2) The safety development in 2018 includes one fatality
3) 2.2 TWh power sourcing in 2018
4) Based on annual sourced volumes of 2.3 million mt/yr
5) Based on sourcing volume of ~ 3.5 million mt for 2018
6) 2017 target not met
7) While we based on a commercial evaluation see that the recycling target originally set for 250,000 mt/year of post-consumer scrap by 2020 will not be met, we continue to develop recycling capacity that can be used for post-consumer scrap as well as for process scrap.
8) 1:1 rehabilitation of areas available for rehabilitation within two hydrological seasons after release. Revised definition of target takes into account the nature of the mining cycle and the time lag necessary to ensure quality rehabilitation to restore biodiversity

Green light: Ambition on track and on target; Amber light: Ambition behind plan, but on target; Red light: Ambition might not meet the medium-term target

Investor information

Hydro's share price closed at NOK 39.21 at the end of 2018. The return ex. dividend for 2018 was negative with NOK 23.1, or negative 37 percent.

Hydro's Board of Directors proposes to pay a dividend of NOK 1.25 per share for 2018, for approval by the Annual General Meeting on May 7, 2019, taking into account a demanding year for the company and the volatility in the aluminium industry. This is down from NOK 1.75 per share paid out for 2017. The proposed payment represents a 60 percent pay-out ratio of reported net income for the year and demonstrates the company's commitment to provide a competitive cash return to shareholders. Hydro has a dividend policy of 40 percent payout ratio of reported net income over the cycle with NOK 1.25 per share considered as a floor.

Financial results

Underlying financial and operating results

Key financial information NOK million, except per share data	Year 2018	Year 2017
Revenue	**159,377**	109,220
Earnings before financial items and tax (EBIT)	**8,522**	12,189
Items excluded from underlying EBIT[1)]	**547**	(974)
Underlying EBIT[1)]	**9,069**	11,215
Underlying EBIT :		
Bauxite & Alumina	**2,282**	3,704
Primary Metal	**1,762**	5,061
Metal Markets	**686**	544
Rolled Products	**413**	380
Extruded Solutions[2)]	**2,390**	284
Energy	**1,846**	1,531
Other and eliminations[2)]	**(310)**	(289)
Underlying EBIT[1)]	**9,069**	11,215
Earnings before financial items, tax, depreciation and amortization (EBITDA)[3)]	**15,796**	18,344
Underlying EBITDA[1)]	**16,344**	17,369
Net income (loss)	**4,323**	9,184
Underlying net income (loss)[1)]	**5,819**	8,396
Earnings per share	**2.08**	4.30
Underlying earnings per share[1)]	**2.75**	3.95
Financial data:		
Investments[1)3)]	**7,614**	28,848
Net cash (debt)[1)]	**(8,653)**	(4,118)
Adjusted net cash (debt)[1)]	**(23,127)**	(17,968)
Underlying Return on average Capital Employed (RoaCE)[1)]	**6.5 %**	9.6 %

Key Operational information	Year 2018	Year 2017
Bauxite production (kmt)[4)]	**6,214**	11,435
Alumina production (kmt)	**3,712**	6,397
Realized alumina price (USD/mt)[5)]	**429**	326
Primary aluminium production (kmt)	**1,993**	2,094
Realized aluminium price LME (USD/mt)	**2,140**	1,915
Realized USD/NOK exchange rate	**8.08**	8.30
Rolled Products sales volumes to external market (kmt)	**951**	940
Extruded Solutions sales volumes to external market (kmt)[6)]	**1,396**	845
Power production (GWh)	**10,693**	10,835

1) Alternative performance measures (APMs) are described in the appendicies to the Board of Directors' report.
2) Other and eliminations includes Hydro's 50 percent share of underlying net income from Sapa until end of third quarter 2017. Extruded Solutions was fully consolidated from October 2, 2017.
3) EBITDA and investments per segment are specified in Note 7: Operating and geographic segment information in the consolidated finanical statements.
4) Paragominas production, on wet basis.
5) Weighted average of own production and third party contracts. The majority of the alumina is sold linked to either the LME prices or alumina index with one month delay.
6) Hydro's 50 percent share of Sapa sales volumes until end of third quarter 2017 and 100 percent of Extruded Solutions sales volumes from the beginning of the fourth quarter 2017.

Hydro's underlying EBIT decreased to NOK 9,069 million from NOK 11,215 million for 2017. The decrease reflects negative effects relating to the production curtailment at Alunorte and increased raw material costs partly offset by a higher all-in metal price and alumina sales price as well as the positive contribution from the full consolidation of Extruded Solutions. Further, the result was positively impacted by strong Energy results and improved downstream margins and volumes.

Liquidity, financial position, investments

Hydro manages its liquidity at corporate level, ensuring sufficient funds to cover group operational requirements.

Hydro's net cash (debt) changed from net debt of NOK 4.1 billion at the end of 2017 to a net debt position of NOK 8.7 billion at the end of 2018. Net cash provided by operating activities of NOK 7.0 billion was not sufficient to cover net cash used in invest activities of NOK 7.2 billion and dividend payments to Norsk Hydro shareholders of NOK 3.6 billion.

Hydro's adjusted net cash (debt) to equity ratio was 32 percent, well below its targeted maximum ratio of 55 percent. Our funds from operations to adjusted net cash (debt) ratio was 46 percent, above the targeted minimum of 40 percent over the business cycle. See note 39 to the consolidated financial statements for information on Hydro's capital management measures.

Norsk Hydro ASA has a USD 1.7 billion revolving multi-currency credit facility with a syndicate of international banks, maturing in November 2020. The facility was undrawn per year-end 2018. The facility will continue to serve primarily as a back-up for unforeseen funding requirements. See note 39 to the consolidated financial statements for additional information.

Reported EBIT and net income

In addition to the factors discussed above, reported earnings before financial items and tax (EBIT) and net income include effects that are disclosed in the table below. Items excluded from underlying EBIT and underlying net income (loss) are defined and described as part of the APM section in the back of this report.

Items excluded from underlying EBIT and net income[1)] NOK million	**Year 2018**	Year 2017
Unrealized derivative effects on LME related contracts	**39**	220
Unrealized derivative effects on power and raw material contracts	**(260)**	246
Metal effect, Rolled Products	**(73)**	(419)
Significant rationalization charges and closure costs[2)]	**79**	210
Alunorte agreements - provision[3)]	**519**	-
Other effects[4)]	**203**	212
Pension[5)]	**40**	-
Transaction related effects (Sapa)[6)]	**-**	(1,463)
Items excluded in equity accounted investments (Sapa)[7)]	**-**	19
Items excluded from underlying EBIT	**547**	(974)
Net foreign exchange (gain)/loss	**1,303**	875
Calculated income tax effect	**(355)**	(564)
Other adjustments to net income[8)]	**-**	(125)
Items excluded from underlying net income	**1,495**	(788)
Income (loss) tax rate	**33%**	17%
Underlying income (loss) tax rate	**30%**	24%

1) Negative figures indicate reversal of a gain and positive figures indicate reversal of a loss.

2) Significant rationalization charges and closure costs include in 2018 rationalization costs in Rolled Products of NOK 39 million and closure costs in Extruded Solutions of NOK 40 million. Environmental liabilities in Kurri Kurri of NOK 181 million and rationalization costs in Extruded Solutions of NOK 29 million were included in 2017.

3) Alunorte agreements - provision refers to the provision recognized in relation to the TAC and TC agreements with the Government of Parà and Ministèrio Pùblico made on September 5, 2018.

4) Other effects include in 2018 a charge of NOK 80 million due to adjustments to the value of certain assets in relation to the Sapa acquisition, a legal agreement of NOK 157 million related to Sapa Profiles Inc. (SPI) that has been under investigation (see note 35 to the Financial statements) and a gain of NOK 34 million due to remeasurement of environmental liabilities related to closed business in Germany. In addition to a gain of NOK 33 million related to the remeasurement of environmental liabilities in 2017, a charge of NOK 245 million related to a customs case in Germany was included in 2017.

5) Pension includes a charge of NOK 40 million due to remeasurement of all UK schemes with Guaranteed Minimum Pensions (GMP) required to be adjusted to equalize pension benefits for gender. The remeasurement is based on the accrued pension benefits in the period between 1990 and 1997.

6) Transaction related effects include the revaluation gain of NOK 2,171 million of Hydro's pre-transactional 50 percent interest in Sapa, as well as the fair value allocated to inventory of finished goods and to the backlog of contractual deliveries as of closure, sold during 2017, reflecting an expense of NOK 707 million.

7) Items excluded in equity accounted investments (Sapa) for the year 2017 include unrealized derivative gains, rationalization charges and net foreign exchange gains.

8) Other adjustments to net income include reduction in tax expense and related interest income of NOK 125 million in total following a closed tax case in September 2017.

Market developments and outlook

On March 8, 2018 the US administration announced a 10 percent tariff on aluminium imports to the US, effective from March 23. Argentina and Australia are exempted from the 10 percent tariff, although Argentina will be covered by a quota. On September 30, 2018 the US, Canada and Mexico came to an agreement on a revised trade deal, called the United States Mexico Canada Agreement (USMCA), replacing the 1994 NAFTA agreement. The USMCA is expected to be ratified during 2019 and does not address the 10 percent tariff on imported aluminium.

On April 6, 2018 the US Department of Treasury's Office of Foreign Assets Control (OFAC) issued a sanctions list that included Russian individuals and companies including the Russian aluminium company Rusal, controlled by Oleg Deripaska. On December 19, 2018 OFAC submitted a notification to the US Congress of its intention to remove Rusal from the sanctions list. Despite attempts to postpone the deadline further, OFAC deleted Rusal from the sanctions list as of January 27, 2019 meaning that the sanctions directed towards the company are now lifted.

Upstream market developments
The Platts alumina price index started 2018 at USD 389 per mt, and was volatile throughout the year, with a low of USD 357 per mt, a high of USD 710 per mt, ending the year at USD 408 per mt. Prices averaged USD 474 per mt for 2018, an increase of 34 percent compared to 2017. Prices as a percentage of LME averaged 22.5 percent for the year, compared to 17.8 percent for 2017. Spot prices at the end of 2018 represented 22.1 percent of LME.

Following the production embargo at the Alunorte refinery, the World ex-China alumina market was in deficit in 2018. The shortfall was balanced by Chinese alumina net exports of 0.95 million mt, with 0.51 million mt of imports offset by 1.46 million mt of exports. China has traditionally been an importer of alumina, with a 2017 total of 2.9 million mt of imports.

Bauxite imports into China continued to grow, with a 2018 total of 82.7 million mt, 20 percent higher than the 68.8 million mt imported in 2017. The increase was driven largely by the continued surge in imports from Guinea, which totalled 38.3 million mt for the year, compared to 27.6 million mt in 2017, and up from 11.9 million mt in 2016. Australia continued as a major supplier of bauxite to China, with a 2018 total of 29.8 mt compared to 25.5 million mt in 2017. Indonesia returned as an important source of bauxite imports with a total of 7.5 million mt in 2018, compared to just 1.3 million mt in 2017. Imports from Brazil continued to decrease, with a 2018 total of 1.6 million mt, compared to 3.3 million mt in 2017.

According to Chinese import statistics, the monthly average delivered China bauxite price was relatively stable in 2018, ranging between USD 52 and 55 per mt. Prices averaged USD 53 per mt for the year, an increase of 4 percent compared to 2017.

Three-month LME prices started the year around USD 2,250 per mt and experienced periods of high volatility during the year. The prices declined during the first quarter and were trading below USD 2,000 in early April. Following the announcement of US sanctions against UC Rusal in early April, prices fluctuated with several hundred dollars, up to levels above USD 2,500 and back down below USD 2,300 within just a couple of weeks. Markets normalised during the latter part of the second quarter, resulting in more stable prices. In line with increased macroeconomic uncertainty, prices experienced a declining trend in the second half of 2018. At the end of the fourth quarter, prices had declined by around USD 400 per mt over the year, ending 2018 at around USD 1,850 per mt. Prices averaged USD 2,210 per mt in the first half of 2018 and declined to an average of USD 2,023 per mt in the second half of the year.

North American and European standard ingot and product premiums started the year at USD 209 per mt and at USD 162 per mt respectively. The premiums increased sharply towards the end of the first quarter, reflecting main events such as the imposition of a 10 percent import tariff in the US as well as sanctions against UC Rusal. North American premium reached a peak of USD 490 per mt in late April, largely reflecting the cost of the 10 percent tariff, while European premium increased to USD 250 per mt in the same period. Premiums in both regions had a declining trend throughout the rest of the year, ending the year at USD 419 in North America and USD 115 in Europe. The decline was influenced by falling LME prices, exports of semi-finished products from China and increased availability of secondary aluminium especially in the North American market. Average North American standard ingot premiums increased USD 220 per mt compared to 2017, while corresponding standard ingot premiums in Europe increased about USD 15 per mt.

Global primary aluminium consumption increased by 3 percent to 65.7 million mt in 2018. Global supply increased by 0.5 percent to 63.8 million mt resulting in large global deficit of around 1.6 million mt. For 2019, global primary aluminium demand is expected to increase by 2-3 percent, resulting in a global deficit market also in 2019.

Demand for primary aluminium outside China increased by around 2.1 percent in 2018, while corresponding production increased by 1.4 percent. Overall, demand outside China exceeded production by around 2.1 million mt in 2018. Demand for primary aluminium outside China is expected to grow by around 1-3 percent in 2019. Corresponding production is expected to be up 3-4 percent, reducing the deficit in the world outside China in 2019.

Demand for primary metal in China increased around 4 percent to 35.9 million mt in 2018. Chinese production growth was close to zero in 2018, resulting in only a small surplus for the year. The historically low Chinese production growth was a result of closures of illegal capacity in 2017, in addition to slower-than-expected ramp ups of new projects as a result of low margins during the year. Chinese primary production growth is expected to increase by 2-4 percent in 2019. This is well below historical average, a result of the direction set out by Chinese authorities to reduce overcapacity within primary aluminium. Primary demand is estimated to increase by around 2-4 percent, resulting in a small surplus in 2019.

LME stocks increased slightly in 2018, from 1.1 million mt at the end of 2017 to 1.3 million mt at the end of 2018. The increase occurred mainly in the fourth quarter, driven by backwardation attracting metal to LME warehouses. Total inventories, including unreported inventories are estimated to have declined throughout 2018. The total stock level is estimated to be around 11.0 million mt at the end of 2018.

Demand for extrusion ingot, foundry alloys and sheet ingot in Europe increased in 2018 compared to the previous year. The consumption of wire rod in the European market went up moderately in 2018 compared to 2017. Consumption of extrusion ingot has been strong in the US also in 2018, while the demand for primary foundry remained stable compared to 2017. In Asia (excluding China), the market for extrusion ingot and primary foundry alloys continued to show moderate growth during 2018.

Downstream market developments
Motor vehicle production in Europe declined as manufacturers reduced the pace of output in response to a backlog in certifying vehicles' carbon dioxide emission as part of the new Worldwide Harmonized Light Vehicles Test Procedure (WLTP), introduced by the European Union in 2017, effective September 2018.

The European market for flat rolled products increased by around 2.9 percent in 2018. Demand growth was stronger in the first half of the year, which was driven by automotive and general engineering.

The European extrusion market experienced another year of growth of around 2 percent in 2018, driven by continued recovery in building and construction sector and positive developments in the industrial markets. North American market has also experienced a strong extrusion demand, driven by positive developments in transportation sector, as well as building and construction markets. Despite the slow-down in automotive segment both in Europe and North America, extruders continue to benefit from material substitution trends.

Energy market developments
In 2018, Nordic electricity prices increased compared to the previous year, primarily due to weaker hydrological balance both in the Nordic and Continental areas and also higher marginal cost for coal and gas power plants. An important price driver during the year was the carbon price which increased substantially ahead of the introduction of the Market Stability Reserve (MSR) from January 2019. The Nordic power prices were particularly strong during the summer and early autumn due to dry weather, low nuclear power availability and high continental power prices.

In Brazil, power prices varied significantly during the year. During the wet season at the start of the year, a temporary oversupply in the North region drove prices to low levels, while price increased again during the summer, in periods to the defined maximum level as decided by the market regulators. However, heavy rainfall in October and November improved the hydrological balance and lead to decreasing prices towards the end of the year.

Risk review

Hydro has developed and implemented an enterprise risk management model, approved by the Board of Directors. In accordance with this model, risk factors that are relevant for Hydro's business are continuously identified, analyzed, addressed and monitored. Risk management is an integral part of our business activities, and the business areas consequently have the main responsibility for managing risks arising from their business activities. Hydro's corporate staffs establish and develop policies and procedures for managing risk, and coordinate an annual overall enterprise risk assessment. Major risks are followed up, on an ongoing basis, as part of our internal performance review structure.

Risk management in Hydro is based on the principle that risk evaluation and mitigation is an integral part of all business activities. A core strategy to reduce the risks related to weak economic and unfavorable market developments is the continual improvement of our competitive and cost position as well as maintaining a solid financial position and strong creditworthiness. Hydro's integrated value chain plays a key role in mitigating risk as the earnings volatility in upstream aluminium is typically higher, whereas downstream and Energy businesses generate more stable earnings over time.

Below is a description of some of the principle risks identified that may affect our business operations, reputation, financial condition, results of operations and, ultimately affect our share price. Some of the mentioned risks might have a positive business impact or represent a business opportunity, whereas the focus in the description below is on downside risk. There may be additional risks unknown to Hydro at the date of this report and risks, currently considered to be immaterial, which could become material. All of the information in this report should be carefully considered by investors, in particular, the risks described in this section.

Changes in the regulatory framework or political environment in which Hydro operates could have a material adverse effect on the company
Hydro needs competitive and predictable framework conditions. Hydro is subject to a broad range of laws and regulations in the legal jurisdictions in which we operate. These laws and regulations impose stringent standards and requirements and potential liabilities regarding accidents and injuries, the construction and operation of our plants and facilities, payment of taxes, air and water pollutant emissions, the storage, treatment and discharge of waste waters, the use and handling of hazardous or toxic materials, waste disposal practices, and the remediation of environmental contamination, among other things. Changes in such laws and regulations, or changes in the way these laws and regulations are interpreted or enforced, may impact our operational licenses, and have a significant negative financial effect for Hydro. There is a risk that new taxes or tariffs are introduced, or the current tax or tariff levels will be increased in the future.

Hydro's operations include extracting and refining bauxite resources and utilizing water resources for the generation of power. Such activities have increasingly been subject to local

and regional tax regimes which are separate from, and in addition to, national tax regimes such as corporate income tax.

Hydro is exposed to a risk of unfavorable macro-economic development, including risk of prolonged periods of low aluminium and alumina prices and oversupply in the global aluminium market, in addition to changes in global trade policy framework
The aluminium industry is pro-cyclical with demand for products closely linked to economic development. This results in significant volatility in the market prices for aluminium products in periods of macroeconomic uncertainty or recession. Macroeconomic development also drives changes in currency values, which have a significant effect on Hydro's cost and competitive position. Aluminium products are traded globally. Development in global trade flows, trade framework, tariffs and anti-dumping legislation are therefore of importance.

Hydro could be negatively affected by material CSR incidents, investigations, legal proceedings, or major non-compliance with laws and regulations
Hydro could be negatively affected by criminal or civil proceedings or investigations related to, but not limited to product liability, environment, health and safety, alleged anti-competitive or corrupt practices or commercial disputes. Violation of applicable laws and regulations could result in substantial fines or penalties, costs of corrective work, the suspension or shutdown of our operations and substantial damage to the company's reputation.

In addition, Hydro is exposed to actual or perceived failures to behave in a socially responsible manner and to manage social impacts, particularly related to human rights breaches. Such failures could result in significant, negative publicity and potential serious harm to Hydro's reputation. Reactions by key stakeholders and communities in which Hydro operates could also interfere or interrupt the operations of our business.

Our business is exposed to competition from China, which could have a significant negative impact on market prices and demand for our products
China is the world's largest consumer and producer of aluminium, with more than half of the global production capacity. As a result, changes and developments in aluminium supply and demand in China have a significant impact on global market fundamentals.

Hydro may fail to realize sufficient value in the execution and implementation of major projects or business acquisitions
Hydro makes significant capital investments and acquisitions as part of its business development and may not be able to realize the benefits expected from such transactions and projects. Major projects and acquisitions are subject to significant risk, and uncertainty in making the investment evaluation, project execution and subsequent operations. Acquisitions may also contain significant unidentified risks and liabilities, which could have a material adverse effect on our profits and financial position.

Hydro could be adversely affected by disruptions or major incidents in our operations and may not be able to maintain sufficient insurance to cover all risks related to its operations
Hydro's business is subject to a number of risks and hazards which could result in disruptions to operations, damage to properties and production facilities, personal injury or death, environmental damages, monetary losses and possible legal liability. Some of our operations are located in close proximity to sizable communities. Major accidents could result in substantial claims, fines or significant damage to Hydro's reputation. Breakdown of equipment, power failures or other events leading to production interruptions in our plants could have a material adverse effect on our financial results and cash flows.

Hydro is exposed to the threat of cyber-attacks which may disrupt its business operations, and result in reputational harm and other negative consequences
Hydro's IS/IT infrastructure is a critical element in all parts of our operations, ranging from process control systems at production sites, central personnel databases to systems for external financial reporting. Cyber-crime is increasing globally, and Hydro is exposed to threats to the integrity, availability and confidentiality of our systems. Threats may include attempts to access information, computer viruses, denial of service and other digital security breaches.

Hydro may be unable to achieve or maintain the operational targets necessary to secure the competitiveness of our business
Hydro operates in a highly competitive market where operational excellence in all parts of the value chain is required to reach and maintain a competitive position. This includes each step of the business process from the sourcing of raw materials, to physical operations of each plant, and the commercial optimization of the product portfolio. Failure to create an environment and competence which enables the organization to continuously achieve stretched operational targets will reduce the competitiveness of our business and result in the failure to meet our long-term financial targets.

Occupational health and safety, and security risks
Hydro is exposed to occupational health and safety risks and incidents with the potential of causing severe damages to individuals, assets and reputation.

Climate change and environmental risks
Hydro is exposed to physical climate related risks, transition risks (risks related to the transition to a low-carbon economy) and environmental risks that could have a material adverse effect on the company, our facilities, performance and the external environment. In addition to such environmental incidents, there are risks related to the effects of known and unknown historical and current emissions to air, water and soil. These may have legal, financial and reputational consequences and require mitigating actions.

Financial position
Our main strategy for mitigating risk related to volatility in cash flow is to maintain a strong balance sheet. Specific key financial ratio levels over the business cycle are targeted, reflecting a solid financial position and investment grade credit rating. These include an Adjusted net cash (debt) to equity ratio below 55 percent and a ratio of Funds from operations to Adjusted net cash (debt) above a level of 40

percent. Maintaining investment grade credit rating secures access to capital markets at attractive terms and gives other important benefits.

Hydro's liquidity position at the end of 2018, with a cash position of NOK 6.0 billion, is considered solid. Hydro also has a credit facility of USD 1.7 billion which expires in November 2020. The facility was undrawn per year-end 2018. Hydro continues to focus on cash generation and credit risk throughout the organization.

Key financial exposures

Hydro's operating results are primarily affected by price developments of our main products, raw materials, margin developments and to fluctuations in the most significant currencies for Hydro, which are the USD, NOK, EUR and BRL.

Hydro's main risk management strategy for upstream operations is to accept exposure to price and exchange rate movements, while at the same time focusing on reducing the average cost position of production assets. In certain circumstances, derivatives may be used to hedge certain revenue and cost exposures.

Downstream and other margin-based operations are to a certain extent hedged to protect processing and manufacturing margins against price fluctuations. An operational hedging system has been established to protect commercial contracts from aluminium price fluctuations.

To mitigate the impact of exchange rate fluctuations, long-term debt is mainly maintained in currencies reflecting underlying exposures and cash generation, while considering attractiveness in main financial markets. Hydro may also use foreign currency swaps and forward currency contracts to reduce effects of fluctuations in the US dollar and other exchange rates.

The table below shows sensitivities regarding aluminium prices and foreign currency fluctuations for 2018. The table illustrates the sensitivity of earnings, before tax, to changes in these factors and is provided to supplement the sensitivity analysis required by IFRS, included in note 13 to the Consolidated Financial Statements. These sensitivities do not consider revaluation effects of derivative instruments, which may influence earnings.

Sensitivities with 100% production

Commodity price sensitivity +10%

NOK Million	UEBIT
Hydro Group	
Aluminium	3,900

Currency sensitivities +10%

NOK Million	USD	BRL	EUR
Sustainable effect			
EBIT			(250)
One-off reevaluation effect			
Financial items			(2,460)

Annual sensitivities based on LME USD 2 040 per mt, USDNOK 8.40, BRLNOK 2.20, EURNOK 9.60.

Sensitivities with 50% production*

Commodity price sensitivity +10%

NOK Million	UEBIT
Hydro Group	
Aluminium	3,500

Currency sensitivities +10%

NOK Million	USD	BRL	EUR
Sustainable effect			
EBIT	2,690	(1,060)	(240)
One-off reevaluation effect			
Financial items	20	700	(2,460)

*Simplified sensitivities based on full year 50% curtailment of Alunorte, Albras and Paragominas

Annual sensitivities based on LME USD 2 040 per mt, USDNOK 8.40, BRLNOK 2.20, EURNOK 9.60.

Compliance, controls and procedures

Hydro's Code of Conduct requires adherence with laws and regulations as well as internal directives and procedures. It is systematically implemented and followed up through our compliance system. The compliance system is based on four pillars: prevention, detection, reporting and responding. In addition to financial compliance, priority areas are HSE, anti-corruption, competition law and data privacy (see the section Society).

Hydro follows the Norwegian Code of Practice on Corporate Governance of October 2018. Details on Hydro's compliance with the code are in the section Norwegian Code of Practice on Corporate Governance, in the appendices to this report.

The Board Audit Committee carries out a control function and arranges for the board to deal with the company's financial and extra-financial reporting.

Research and development

The greater part of our R&D expenses goes to our in-house research and application development organization, while the remainder supports work carried out at external institutions. Our main R&D centers are in Årdal (smelter technology) and Sunndal (alloys and casting) in Norway, Bonn in Germany (Rolled Products), and Finspång in Sweden and Detroit in the USA (both Extruded Solutions). A significant research and development department for Bauxite & Alumina has been built up in Alunorte in Barcarena, Brazil.

R&D Expenses

NOK million

Received funding in 2018 accumulated to NOK 35 million. In addition comes NOK 311 million related to Enova's support to the Karmøy Technology Pilot.

Our R&D efforts are concentrated on:

- Making products that promote the use of aluminium and sustainable development
- Developing the world's best electrolysis technology
- Using R&D and technology to ensure optimal operations in existing assets, including cost and HSE
- Developing recycling technology
- Increasing the share of value-added products and tailored solutions for the customer
- Utilizing the opportunities of Industry 4.0 to improve process stability, productivity, cost and safety

Hydro's Technology Board consists of the members of Hydro's Corporate Management Board. The group meets every quarter to understand and discuss innovations in the business areas, including their value to the company. Innovations include the changes achieved through our continuous improvement work on all organizational levels. Business areas are responsible for their own technology development and for the execution of their respective technology strategies. A corporate technology office shall ensure a holistic and long-term approach to Hydro's technology strategy and agenda. Hydro's Chief Technology Officer (CTO), reports directly to the CEO, to strengthen technology leadership. The CTO leads an internal R&D network with representatives from the business areas and supports the Hydro Technology Board in developing overall research and technology priorities and strategies.

A major advantage for Hydro from an innovation perspective is our broad knowledge and control of the entire value chain from bauxite mining, alumina refining, electrolysis of primary aluminium and alloy technology to finished products and recycling.

Our aluminium plants in Sunndal (Norway) and Qatalum (Qatar) utilize HAL 300 technology. Hydro developed this technology, which features energy consumption of around 13.5 kWh/kg compared to a global industry average of about 14 kWh/kg.

Our 75,000-metric-ton-per-year technology pilot, with the aim of full-scale industrial testing of our proprietary HAL4e technology, started production at Karmøy, Norway, in January 2018 and reached full production in June 2018. The total cost of the project was NOK 4.3 billion. Enova, a Norwegian public enterprise supporting new energy and climate-related technology, contributed NOK 1.6 billion toward the total cost. Although still in a qualification phase, the Karmøy Technology Pilot is producing the world's most climate and energy-efficient primary aluminium. The Pilot also targets spin-off effects for Hydro's existing smelter portfolio.

Bauxite residue (also known as red mud) is a challenge in our industry due to its alkalinity and large volumes. Hydro participates in international collaboration projects investigating possibilities to use bauxite residue as a resource. An important example is together with the Norwegian University of Technology and Science (NTNU), Sintef, Norcem/Heidelberg and Veidekke to develop a new type of concrete using bauxite residue as a resource to improve quality. We are also working together with other aluminium companies through the International Aluminium

Institute to solve this industry challenge. In addition, we are investing in R&D to reduce the total alkalinity of the bauxite residue.

An important part of Hydro's overall technology strategy is that our researchers cooperate closely with operators and experts in optimizing operations in existing plants. The competence base in Hydro's technology environments is on a very high level and in core areas it is world-class. In recent years we have emphasized utilizing this competence in operational improvements.

The growing use of aluminium in the automotive industry is being driven by emissions regulations and passenger safety requirements. Aluminium is well-suited for all cars, from petrol-powered automobiles to fully electric vehicles and vehicles which use hydrogen fuel cell technology. Hydro is a large supplier to the automotive industry. Customers include major producers in Europe, North America and Asia.

Society

As a global aluminium company with mining interests, ensuring responsible conduct in relation to society at large is important throughout Hydro's activities. We have to consider our impact on society, spanning from construction to divestment and closure activity, as well as the exposure to corruption and human rights violations, both within our own operations, the communities we are part of, and in the supply chain.

Our compliance system shall ensure that all persons acting on behalf of Hydro comply with applicable laws and regulations and with the requirements adopted by Hydro.

Some of the measures we pursue to ensure integrity and responsible behavior include:

- Zero tolerance of corruption in the private and public sector
- Ongoing human rights due diligence, including audits of joint ventures and suppliers
- Continuous stakeholder engagement linked to existing operations and new projects

Hydro's board-sanctioned Code of Conduct creates the foundation that supports our efforts to do the right things and to always act with integrity throughout our global organization wherever we operate and conduct business on behalf of Hydro. It requires adherence with laws and regulations as well as internal steering documents and is systematically implemented and followed up through our compliance system.

Our compliance system is based on a clear governance structure defining roles and responsibilities with regard to compliance and all compliance-related activities undertaken throughout the company.

The management of compliance risks, including risks related to corruption and human rights violations, are integrated in our business planning, enterprise risk management and follow-up process, including relevant risk-mitigating actions and key performance indicators. The status of progress of actions as well as any non-compliance matters is addressed in the quarterly performance review meetings that each business area has with the CEO, and an annual compliance report is submitted to the board of directors. The head of corporate compliance reports to the board of directors through the board audit committee at her own discretion. She meets with the board of directors periodically and participates in all board audit committee meetings.

Hydro's corporate social responsibility (CSR) is built on the basis of making a positive difference by strengthening our business partners and the local communities where we operate. To do this, we target the fundamental drivers of long-term development. In line with stakeholder expectations and needs, and through strong partnerships, we aim to:

- Contribute to quality education in our communities
- Promote decent work throughout the value and supply chain
- Foster economic growth in our communities
- Strengthen local communities and institutions through capacity building on human rights and good governance

We are committed to building a culture of trust where employees are comfortable to ask questions, seek guidance, raise concerns, and report suspected violations. Normally, concerns and complaints should be raised with the employee's superior. However, if the employee is uncomfortable with that, he or she may raise the issue with Human Resources, HSE, a union/safety representative, Compliance, Legal or Internal Audit. The employee can also use Hydro's whistle-blower channel, AlertLine, where concerns can be reported anonymously. All employees and on-site contractors can use the AlertLine in their own language at all times via tollfree phone numbers, Hydro's intranet or through a dedicated address on the Internet. In certain countries, e.g. Spain, there are legal restrictions on such reporting lines. In 2018, 342 reports were filed through Hydro's AlertLine compared to 302 in 2017 including in Sapa before the acquisition on 2 October. All cases were investigated. In total 14 persons were dismissed as a result of breaches of Hydro policy in 2018. The number is limited to cases reported to Hydro's Internal Audit. This includes one person related to a case of confirmed corruption.

The head of internal audit reports to the company's board of directors through the board audit committee. Every quarter she informs the board audit committee and periodically the corporate management board about matters reported through the AlertLine. Hydro's internal audit has resources both in Norway and Brazil.

We recognize that our activities impact the societies in which we operate, and we have a long tradition of conducting dialogues with the relevant parties affected by our activities. These include unions, works councils, customers, suppliers,

business partners, local authorities and non-governmental organizations. We have established contact with local authorities and representatives for our neighbors, including dialogue with traditional Quilombola groups in Brazil.

Grievance mechanisms are important to protect the rights of individuals and groups affected by our operations. At many sites, such mechanisms are available to all local stakeholders. Channels for submitting grievances may vary depending on local needs. In Brazil, the system has several channels, including a phone number, email and dedicated, specially trained field workers.

Hydro has significant operations in Barcarena, Brazil, including the Alunorte alumina refinery and Albras aluminium plant. Local social conditions are challenging with high levels of unemployment and general poverty. For more information, please see the section "The Alunorte situation" earlier in this report.

In 2017, the Danish Institute for Human Rights (DIHR) performed a comprehensive mapping of Hydro's human rights risks (excluding Extruded Solutions). The mapping covered all countries in which Hydro operates, excluding Extruded Solutions. The report is publicly available. A full human rights due diligence for the Alunorte refinery and the Paragominas mine is planned performed in 2019.

In 2018, we launched the strategic target to contribute to quality education and capacity building for 500,000 people in our communities and for business partners from 2018 until end of 2030.

Community investments, charitable donations and sponsorships

Around 35 million NOK relates to emergency relief following the extreme rainfall and subsequent flooding of Barcarena in 2018. Around 10 million NOK relates to food cards as part of the TAC agreement.

Extruded Solutions has a wide range of sponsorships and support programs based on local needs. These activities are not yet included in Hydro's reporting.

Hydro is concerned about fundamental labor rights, such as freedom of association, minimum wage requirements and the regulation of working hours. We support the principle of freedom of association and collective bargaining, and have a long tradition of maintaining a good dialogue with employee organizations. All major sites in Europe and Brazil are unionized. Extruded Solutions has a major presence in the USA, and about 60 percent of our US employees are working at unionized sites. All business areas have a forum for dialogue between the management and union representatives. Hydro's Global Framework Agreement was last updated in 2016 and has been extended till the end of 2019.

Hydro's supplier requirements regarding corporate responsibility are, as stated in our global directives and procedures, an integral part of all stages of the procurement process. The requirements cover issues related to environment, human rights, anti-corruption and working conditions including work environment. Extruded Solutions has implemented the Integrity Risk Management process for a majority of its suppliers in 2018. Regular sanctions screening will start in 2019.

Hydro is committed to the protection of people, environment, physical assets and data & information anticipating and preparing for potentially adverse incidents with crisis potential in order to maintain business and operational continuity.

Hydro has been included in the Dow Jones Sustainability Indices each year since the index series started in 1999. We are also listed on the corresponding UK index FTSE4Good, and the UN Global Compact 100 stock index.

Hydro support the principles underlying the Universal Declaration of Human Rights, the UN Global Compact and ILO's eight core conventions. We are a member of the International Council on Mining and Metals (ICMM) and are committed to following their principles and position statements. We are also a member of the Aluminium Stewardship Initiative, a multi-stakeholder process to set standards to improve environmental, social and governance performance across the aluminium value chain.

Hydro uses the GRI Standards for voluntary reporting of sustainable development. We support the Extractive Industries Transparency Initiative (EITI) and comply with the Norwegian legal requirements on country-by-country reporting, and we prepare a modern slavery transparency statement according to UK and Australian legislation, see the appendices to this report.

In addition, we follow the Oslo Børs guidance on the reporting of corporate responsibility.

Environment

The most important environmental effects of Hydro's activities relate to climate change, biodiversity, recycling and water and waste management. The main resource inputs are bauxite, energy, water and land use.

13 CLIMATE ACTION

Hydro's climate strategy is an integral part of its overall business strategy, aiming at driving improvements and development within the company. Consequences to the climate strategy is also a criterion for all significant

investment decisions. The strategy includes reducing the environmental impact of our operations as well as taking advantage of business opportunities by enabling our customers to do the same. While some production plants or products might have a higher carbon footprint than others, the overall company balance (the difference between emissions and benefits) should be zero or negative by 2020.

Hydro's prognosis for GHG emissions from 2017 showed an increase towards 2020 as a result of expected increase in production of alumina and primary aluminium from 2018 and onwards. The current reduced production at Alunorte from February 2018 has significantly reduced Hydro's GHG emissions in 2018, resulting in Hydro being carbon neutral in 2018 if considering scope 1 and scope 2 emissions only. If considering scope 3 emissions from purchased alumina due to the supply deficit, Hydro is not carbon neutral in 2018. Hydro is, however, still on track towards being carbon neutral in a life-cycle perspective in 2020. This will be achieved by:

- Increased production of primary aluminium in Norway, which is based on hydropower
- Increased recycling
- Increased deliveries to the automotive sector

Carbon neutrality in 2020 will, however, require that we succeed in increasing our Norwegian capacity according to plan, and that we are able to increase our recycling of post-consumer scrap. With the increase of GHG emissions from Extruded Solutions, it is uncertain whether their share of post-consumer scrap is sufficient to compensate. Our carbon neutrality is also sensitive to our penetration into the automotive market. The planned fuel switch project at Alunorte is not included in the forecast by 2020 and will, if realized, further improve Hydro's carbon balance.

In 2018, Hydro concluded a review of its climate-related risks, including physical, technological, commercial, legal and reputational risk. The review forms the basis for scenario analyses and an update of the climate strategy. Hydro is a signatory to the Task Force on Climate-Related Financial Disclosures (TCFD).

Hydro's environmental strategy also prioritize the following areas:

- Ecosystems and biodiversity
- Water stewardship
- Waste and efficient resource use
- Product stewardship

A new environment strategy, including legacy management, is under development.

Although originally set as a target for 2017, the 1:1 land rehabilitation target in our mining areas continues to apply as it provides a solid driver for rehabilitation. It has, however, become a rolling target, aiming for a 1:1 rehabilitation of areas available for rehabilitation over two hydrological seasons after release. This revised definition takes into account the nature of the mining and rehabilitation cycles, and the time lag necessary to ensure quality rehabilitation to restore biodiversity. It also takes into account that land periodically needs to be set aside for temporary infrastructure in order to safely operate the mine. Of the 151 hectares made available for rehabilitation in 2017, 88 percent was rehabilitated in 2018. The remaining 12 percent will be completed in 2019 in order to meet the 1:1 rehabilitation target.

We cooperate with academic institutions to increase our knowledge and secure a science-based approach. This includes the formation of the Biodiversity Research Consortium Brazil-Norway (BRC) in 2013.

Direct greenhouse gas emissions from Hydro's consolidated activites

Emissions in 2018 decreased due to the embargo at Alunorte, and curtailment at Albras and Paragominas.

In addition to land use and biodiversity, the main environmental issues in bauxite extraction and alumina refining include waste disposal and greenhouse gas emissions. Waste production includes significant amounts of mineral rejects (tailings) from the bauxite extraction process and bauxite residue, also known as red mud, from the alumina refining process. Tailings are stored in settling ponds. Separated water is clarified and reused in the process.

In Paragominas, a new tailings system was completed in 2017. The new tailings dams are situated on a plateau where mining has been finalized. The old tailings system is constructed in a shallow valley. When tailings dams are closed, they need to settle for at least five years before being available for rehabilitation.

Recycling

Tailings from bauxite production

Tailings production decreased significantly in 2018 due to the Paragominas curtailment.

Bauxite residue from alumina production

Bauxite residue production decreased significantly in 2018 due to the Alunorte embargo.

Bauxite residue is a by-product of the alumina refining process. Its disposal is challenging due to large volumes and the alkaline nature of the liquid component of the residue. The residue is washed with water to lower the alkalinity and to recover caustic soda for reuse. Hydro uses an enhanced dry stacking technology for disposing of bauxite residue which allows for residue storage at steeper slopes, reducing the disposal area requirements. This reduces the relative environmental footprint. The new bauxite residue deposit area at Alunorte includes more advanced press filters. These are capable of reducing the residue moisture content to 22 percent, down from 36 percent achieved with the previous drum filters technology.

The dams and deposits are frequently inspected by Hydro and Brazilian authorities, and are also subject to inspection by e.g. Norwegian Geotechnical Institute (NGI) and Geomecanica. The last NGI visit to Paragominas and Alunorte took place in 2016 and resulted in an action plan to secure the long-term viability of the tailings dams and bauxite residue storage areas. Following Vale's Brumadinho accident in Brazil in January 2019, we are reviewing our tailings management system to ensure we can continue to operate safely. The tailings dams at Paragominas are built using mainly downstream elevation which provide high structural integrity and safety. At one dam, however, there is one section using centerline elevation. This section is part of the top elevation which is one meter high. The material stored in our dams is also of a much higher final solids content (55-60 percent). Hydro is closely monitoring and analyzing the impact on the industry, including potential regulatory, political and societal implications on the back of the Brumadinho incident. Safe operations in compliance with regulatory requirements is crucial for Hydro. The Paragominas dams are stable and regularly monitored and audited by external experts. The dams meet all parameters of current environmental and mining legislation.

For information related to the Alunorte situation, please see the dedicated section earlier in this report.

Spent potlining (SPL) from electrolytic cells used in primary aluminium production is defined as hazardous waste. We are actively trying to find alternative use of SPL from our operations.

Hydro uses the WBCSD global water tool to perform an annual review of water withdrawal from water-stressed areas. The mapping of Hydro's sites in 2018 showed that 0,3 percent of our overall fresh-water input came from water-stressed areas, with regard to annual renewable water supply (according to the definition used by WBCSD). Qatalum in Qatar relies on public water supply produced by desalination. Seawater is used for wet cooling towers at the power plant as well as for wet scrubbers at the potline fume treatment plants.

GHG emission intensity - alumina refining

Mt CO2e per mt aluminium

Includes greenhouse gas (GHG) emissions from alumina refining.

GHG emission intensity - electrolysis

Mt CO2e per mt aluminium

Greenhouse gas (GHG) emissions from the electrolysis process from Hydro's smelters, excluding Neuss in Germany

In 2017, Hydro developed a basic water risk analysis tool, covering water use and discharge, to be applied across key operations. Preliminary findings supported the results of the WBCSD global water tool - operating in water-stressed areas is not a material risk for Hydro's key operations. Instead, the more material risks are linked to the management of excess water and the quality of the external bodies into which Hydro discharges process water. The previous water-related target, to reduce water use in water-stressed areas, has thus been set aside.

Following a mass balance of mercury at Alunorte in Brazil, which was concluded in 2017, Hydro decided to install four mercury condensers on the digestor lines. The first condenser was installed in 2018 as a pilot and, based on the technical performance, the remaining three will be installed and commissioned in 2020.

Engagement with customers and other stakeholders on the environmental impact of our processes and products is an important element of our product stewardship. We perform life-cycle assessments for all major product groups to identify improvement potential. We also assess other aspects such as energy and material consumption, toxicity and recyclability.

Land use and rehabilition - Paragominas

Hectares

The emerging reforestation gap is due to infrastructure areas made available in 2018 for rehabilitation, as well as failed areas of historical rehabilitation.

People

Hydro shall be a leading company in our industry in the area of occupational health and safety. This will be achieved through the consistent implementation of the management system; committed and visible leadership, and full engagement of all employees.

The negative development in safety performance was concerning in 2018 with total recordable injuries increasing and a fatality at our Extrusion facility in Hungary. The fatality was thoroughly investigated with corrective actions taken locally and lessons learned communicated and acted upon across all operational sites.

Nearly half of the reported injuries in 2018 were related to hands, about 20 percent legs, about 15 percent related to the face, eyes and head and 10 percent arms and shoulders.

All business areas are active in identifying risks and the risk KPI remains an important leading indicator helping monitor and manage processes and tasks with high inherent risks.

Existing health and wellbeing programs are being expanded including physical and psychosocial risk assessments. The Hydro Monitor will be further developed to provide feedback to our HSE initiatives.

Fatal accidents

Number

Hydro experienced one fatal accident in 2018.

Total recordable injuries

Per million hours worked

The occupational illness rate in 2018 was 0.5 cases per million hours worked, compared to 0.3 in 2017, excluding Extruded Solutions. Most of the cases related to occupational illness relates to noise. We do not yet have comparable data for Extruded Solutions.

Sick leave in Hydro's global organization was 3.6 percent in 2018, compared to 3.4 percent in 2017. In Norway, sick leave was unchanged from 2017 at 4.0 percent, and women had a sick leave of 4.3 percent and men 3.5 percent.

Hydro had 36,236 permanent employees at the end of 2018, an increase from 34,625 in 2017. The number of temporary employees was 1,680 compared to 1,646 the year before. Contractor employees represented about 10,500 full-time equivalents during 2018, up from about 9,000 in 2017. The large majority of employees are concentrated in the USA, Brazil, Germany and Norway. Extruded Solutions has a greater extent of seasonal variations than the other business areas in Hydro. This is solved in different ways in different parts of the organization and may include the use of agency workers. We still do not have the full overview of the extent of such use.

In 2018, Hydro continued the work for successful integration of Extruded Solutions through the two initiatives established in 2017: New Chapter, aiming to create a common platform and identity for Hydro's 36,000 employees. We have renewed the company's value platform the Hydro Way and the visual profile including the new logo. In addition, the strategic direction Better, Bigger, Greener and stakeholder positioning strategy have been renewed. The Fit4Future initiative aims at step-change improvements to lift staff value creation and lower costs, divided into three main focus areas: strategic fit, differentiation and simplification. Extruded Solutions has also started implementation of Hydro's common process for people performance and development, My Way, and Hydro Academy, a platform for learning and development.

In order to deliver on our strategic goals and remain competitive, Hydro needs leaders and specialists with the right competence. This means that Hydro is dedicated to attracting, developing and retaining competence to ensure our future success. After an update of Hydro's people strategy in 2016, we continued to reinforce some existing processes and implement some new. We initiated the development of a global framework for competence management. This work will continue in 2019.

Hydro's global employee engagement survey Hydro Monitor is normally run every second year. The latest survey took place in 2018 and reached the top 10 percent according to the IBM External Norm on the Employee Engagement Index. The survey did not include the business area Extruded Solutions, that will be included in Hydro Monitor 2019. Maintaining employee engagement is a key priority going forward. All units have action plans based on their results.

Hydro's common process for people performance and development, My Way, includes an appraisal dialogue, individual development plan and follow up, as well as talent planning and succession management. In 2018, all employees[2] except those who work in manufacturing operations in Extruded Solutions were invited to take part and 96 percent participated compared to a target of 87 percent. While some plants have paper-based appraisal dialogues also for employees who work in manufacturing roles, we will not be able to roll out My Way throughout the entire company until 2021 at the earliest, when a new system will be available to all employees.

In order to have a healthy pipeline of leaders with the required breadth of experience, we strive to rotate employees early in their careers so that they gain skills from different parts of the organization. Through the succession and career part of My Way, we work with the leadership and specialist pipeline and identify required development needs.

Hydro's organization around the world represents significant diversity in education, experience, gender, age and cultural background. We see this diversity as a source of competitive advantage, as it encourages innovation, learning and better

[2] Excluding employees on leave and those being employed after the main part of My Way is performed

customer understanding. Through diversity and inclusion, we want all employees to know they are valued for their differences and that they contribute to the success of our business strategy. In 2018, 18 percent of Hydro's employees were women, up from 17 percent in 2017. The share of women was 40 percent in Hydro's Corporate Management Board in 2018. With three women among the six shareholder-elected members on the Board of Directors, Hydro complies with the Norwegian legal requirements on female representation. In 2018, we updated the ambition to increase diversity and accommodate an inclusive work environment. The new ambition is better suited to our business needs with an integrated Extruded Solutions.

Share of women leaders

The total share of women at all levels in Hydro was 18 percent in 2018.

Share of non-Norwegian leaders

We are continually adjusting working conditions so that all employees have the same opportunities in their workplace. In Brazil, we are required to employ at least 5 percent disabled people. Paragominas employed 4.9 percent disabled people by the end of 2018, and Alunorte were at 4.7 percent at the end of 2018, while the level at Albras was 3.5 percent. Just as important as achieving the legal requirements, Alunorte, Paragominas and Norsk Hydro Brasil are working on the career development of employees with disabilities.

Restructuring and continuous improvement are essential elements of our business operations. Our aim is to involve employees in such processes at an early stage in order to achieve the best results for individuals and the company.

All employees shall receive a total compensation that is competitive and aligned with local industry standard (but not market leading). The compensation should also be holistic, performance oriented, transparent, fair and objective. Salaries in the organization are reviewed on a regular basis. There is no significant gender-pay differentials for employees earning collective negotiated wages in Norway, Germany and Brazil. Following the integration of Extruded Solutions, the USA and Hungary have become significant countries of operations for Hydro. For 2018, we have looked into the salary differences for all Hydro employees in Hungary and based on overall figures we find no significant gender related salary differences. We have also looked into the salary conditions for all Hydro employees in the USA. Based on our initial analysis, on average there are no significant gender related salary differences.

The annual bonus of Hydro executives shall reflect achievements in relation to pre-defined financial targets and achievements of operational and organizational key performance indicators (KPIs). Targets relating to safety, environment, corporate social responsibility, compliance and leadership expectations constitute a substantial part of the annual bonus plan. Please see note 8 and 9 to the consolidated financial statements for more information.

Board developments

The Board of Directors has an annual plan for its work. It includes recurring topics such as strategy review, business planning, risk and compliance oversight, financial reporting, people strategy, succession planning as well as HSE, climate change and CSR. The board of directors is closely following the market and macro-economic developments relevant for the aluminium industry.

Highest on the board's agenda in 2018 was the situation for Hydro's operations in Brazil related to the 50 procent production embargo on Alunorte. The situation has been addressed in all board meetings since the rainfall event in February 2018, and several extraordinary meetings have been held to address critical matters. The board had an HSE deep-dive with focus on fatality prevention, as well as an operational deep-dive into Extruded Solutions. The board conducted site visits at the Holmestrand and Magnor plants.

The Board of Directors conducts an annual self-assessment of its work, competence and cooperation with management and a separate assessment of the chairperson. Also the board audit committee performs a self-assessment. The reviews are facilitated by the corporate advisory firm Lintstock. The main conclusions of all assessments were submitted to the nomination committee, which in turn assessed the board's composition and competence.

The Board of Directors held 18 meetings in 2018 with an attendance of 92 percent. The compensation committee held six meetings and the audit committee ten meetings.

Net income and dividend – Norsk Hydro ASA

Norsk Hydro ASA (the parent company) had a net income of NOK 1,015 million in 2018 compared with net loss of NOK 183 million in 2017. The result reflects increased dividends from subsidiaries in 2018 compared to 2017 and net foreign exchange gains in 2018 compared with net foreign exchange losses in 2017.

For 2018, Hydro's Board of Directors proposes a dividend of NOK 1.25 per share reflecting Hydro's robust financial situation, taking into account a demanding year for the company and the volatility in the aluminium industry. The proposed payment represents a 60 percent pay-out ratio of reported net income for the year and demonstrates the company's commitment to provide a competitive cash return to shareholders. Hydro has a dividend policy of 40 percent payout ratio of reported net income over the cycle with NOK 1.25 per share considered as a floor.

According to section 3-3 of the Norwegian Accounting Act, the board of directors confirms that the financial statements have been prepared on the assumption of a going concern.

Oslo, March 12, 2019

Dag Mejdell
Chair

Irene Rummelhoff
Deputy chair

Arve Baade
Board member

Finn Jebsen
Board member

Liselott Kilaas
Board member

Sten Roar Martinsen
Board member

Thomas Schulz
Board member

Svein Kåre Sund
Board member

Marianne Wiinholt
Board member

Svein Richard Brandtzæg
President and CEO

Business description

34 History and development

35 Operating segments

35 Business and operating information

35 Bauxite & Alumina

42 Primary Metal

50 Metal Markets

52 Rolled Products

58 Extruded Solutions

63 Energy

67 Regulation and taxation

70 Other information

Quick overview

Hydro is a fully integrated, leading worldwide supplier of bauxite, alumina, primary aluminium, aluminium casthouse products and fabricated aluminium products.

We have substantial interests in bauxite and alumina including one of the world's largest bauxite mines and the world's largest alumina refinery, both located in Brazil. We operate or are partners in modern, cost-efficient primary metal production facilities in several countries in Europe, Canada, Australia, Brazil and Qatar, and in flexible remelting plants in a range of countries in Europe and the US.

We are an industry leader for a range of downstream products and markets, in particular the building, packaging, lithographic and automotive sectors. We supply high-quality, value-added aluminium products and solutions, and have strong positions in markets that provide opportunities for good financial returns.

With more than 100 years of experience in hydropower, Hydro is the third-largest power producer in Norway, and the largest publicly owned producer.

History and development

Norsk Hydro ASA was organized under Norwegian law as a public company in 1905 to utilize Norway's large hydroelectric energy resources for the industrial production of nitrogen fertilizers. Our history, spanning many industries and several continents, has been underpinned by three distinctive strengths: the spirit of entrepreneurship, a dedication to innovation and the careful nurturing of our strengths and values.

An emphasis on industrial research and new business alliances enabled us to expand our fertilizer operations following the First World War. In 1928-29, improved fertilizer technology was introduced at Hydro's first industrial sites in Telemark in Southern Norway. Advancements in electricity transmission technology paved the way for the construction of a new fertilizer plant at Herøya, close to Porsgrunn. This provided us with easier access to important raw materials and ideal harbor conditions.

In the three decades following the Second World War, Hydro rebuilt itself into an industrial conglomerate, expanding into a number of new businesses in Norway. In 1951, we began producing magnesium metal and polyvinyl chloride at Porsgrunn. We constructed the Røldal-Suldal hydroelectric power plant to provide energy for our operations at Karmøy, and opened an aluminium reduction and semi-fabricating plant there in 1967.

An era of diversification
In order to secure stable access to raw materials and energy for our fertilizer operations, we investigated opportunities to participate in oil and gas production in the middle of the 1960s. After several years, Hydro and its partners discovered oil and gas in the Ekofisk and Frigg fields on the Norwegian Continental Shelf. Our experience in the chemical process industry and abundant natural gas liquids resources provided the foundation for investments in the petrochemicals industry in Norway. In 1978, we commenced production of ethylene and vinyl chloride monomer.

During this time, we also pioneered new labor relations practices aimed at democratizing the workplace and increasing the cooperation between management and employees, leading to a spirit of collaboration which continues to define the company today.

Decades of global expansion
Hydro expanded globally in the 1980s. We developed our fertilizer operations into one of the leading suppliers in Europe. We also entered a new era as an oil company, becoming operator of the Oseberg offshore oil field. Research continued to drive our development as we introduced new technologies for deep-water oil and gas production and horizontal drilling. In 1986-87, we acquired the Norwegian state-owned aluminium company, Årdal og Sunndal Verk, in addition to several European aluminium extrusion plants from Alcan and Alcoa, establishing Hydro Aluminium as a major business within Hydro and an important player in the European aluminium industry.

Later, we developed our businesses further through substantial acquisitions, including the German aluminium company VAW in 2002. We also invested significant capital towards the expansion of existing alumina and aluminium production facilities, including our fully owned Sunndal primary metal plant in Norway, the part-owned Alouette smelter in Canada and three expansions of the Alunorte alumina refinery in Brazil. This was followed by the decision to participate in the construction of the Qatalum smelter in Qatar. In 2007, Hydro completed the first phase of the giant Ormen Lange gas field, considered one of the largest industrial projects ever undertaken in Norway. A significant portion of the expansion of these businesses was financed through the sale of non-core operations.

Restructuring and concentration
The first decade of the new millennium encompassed a major restructuring of our downstream aluminium operations, the closure of higher cost smelters, and ultimately, the transformation of Hydro into a focused aluminium company. In 2004, we demerged our fertilizer business through the creation of Yara, and we merged Hydro's petroleum activities with Statoil in 2007.

During this period, Hydro invested roughly NOK 18 billion in its aluminium and energy businesses in Norway, including NOK 11 billion in its Norwegian smelter system, NOK 2.2 billion upgrading and expanding its hydropower production operations and NOK 3 billion in research, development and production support relating to both its upstream and downstream aluminium operations. As a result, annual electrolysis production in Norway increased from 760,000 mt to about 900,000 mt, including the shutdown of roughly 250,000 mt of older, higher cost and higher emission capacity.

Transforming transactions
In 2011, Hydro transformed its business through the acquisition of the aluminium assets of Vale SA, securing its position in bauxite and alumina and lifting the company to the top tier in the aluminium industry. Combining Vale Aluminium with Hydro has resulted in a stronger company, fully integrated into bauxite, with a long alumina position which is a preferred position in a resource constrained world.

In 2013, Hydro merged its aluminium extrusion, building systems and precision tubing businesses with Orkla ASA's fully owned extrusion company, Sapa, forming a 50/50 percent joint venture. In 2017, Hydro acquired Orkla's 50 percent interest in Sapa, securing full ownership of the global leader in extruded aluminium solutions. The new business area Extruded Solutions has significant operations in Europe, North America, South America and Asia.

For further information, see
www.hydro.com/en/about-hydro/our-history

Operating segments

Hydro is a fully integrated aluminium company with attractive equity positions in bauxite, alumina and power, the most important raw materials in the production of primary metal. We are one of the world's largest producers and suppliers of alumina and primary aluminium. Alumina production well in excess of our own requirements gives us a favorable market position. Substantial self-generated hydroelectric capacity in Norway a dedicated gas-fired plant in Qatalum, in addition to long term power contracts, provides secure access to energy.

Downstream, Hydro is an industry leader for a range of rolled and extruded aluminium products and solutions, in particular the building, packaging, lithographic, precision tubing and automotive sectors. Our ambition is to be recognized as the world's foremost aluminium solutions supplier, working in partnership with our customers and driving our business forward.

Hydro's business is divided into six operating segments including Bauxite & Alumina, Primary Metal, Metal Markets, Rolled Products, Extruded Solutions and Energy. Bauxite & Alumina includes our bauxite mining activities comprised of the Paragominas mine and a 5 percent interest in Mineracao Rio de Norte (MRN)[3], both located in Brazil, as well as our 92 percent interest in the Brazilian alumina refinery, Alunorte. These activities also include Hydro's longterm sourcing arrangements and alumina commercial operations.

Primary Metal consists of our primary aluminium production, remelting and casting activities at our wholly owned smelters located in Norway, and Hydro's share of the primary production in partly-owned companies located in Slovakia, Qatar, Australia, Canada and Brazil.

Metal Markets includes all sales and distribution activities relating to products from our primary metal plants and operational responsibility for our stand-alone remelters. Metal Markets also includes metal sourcing and trading activities, which sources standard ingot for remelting in Hydro's remelters and primary casthouses from third parties and provides operational risk management through LME hedging activities.

Rolled Products consists of five European rolling mills including our 50 percent interest in the AluNorf rolling mill in Germany. Rolled Products also includes the Neuss primary aluminium smelter in Germany.

Extruded Solutions consists of our extrusion-based business, located mainly in Europe and the Americas, which is focused on delivering solutions to the building and construction, transportation, and engineered products industries. Extruded Solutions also includes our aluminium building systems and precision tubing activities.

Energy is responsible for managing Hydro's captive hydropower production, external power sourcing arrangements to the aluminium business and identifying and developing competitive energy solutions for Hydro worldwide.

Business and operating information

The following section includes a description of the industry developments impacting our business, our strategies and key performance targets and a description of operations for each of our business areas including key revenue and cost drivers. See section - Financial and operating review - later in this report for comparative production and sales volume information for our different business areas.

Hydro has zero tolerance for corruption and supports the principles underlying the Universal Declaration of Human Rights, the UN Global Compact and ILO's eight core conventions. Hydro is also committed and has an ambition to avoid all serious accidents in our operations. Our compliance system requires adherence with external laws and regulations as well as internal steering documents and is based on prevention, detection, reporting and responding. We are proactive in seeking to interact with counterparties that also adhere with external laws and regulations. TRI rate (total recordable injuries per million hours worked) is a metric we use for setting targets and monitoring our overall safety performance. See Viability performance section later in this report for more information on our approach, key performance targets and description of programs and activities relating to these issues.

Bauxite & Alumina

Industry overview
Bauxite rock is composed mainly of aluminium hydroxide-bearing ore minerals, with accompanying minerals commonly containing iron oxides and hydroxides, and silica as clay and/or quartz. The three main ore minerals are gibbsite, boehmite, and diaspore. Their relative abundances in a particular bauxite source will determine alumina processing characteristics, and consequently impact the design, capital and operating costs of a related alumina refinery. In general, gibbsitic bauxite is preferred, as it can be digested at lower temperatures and pressure than boehmitic or diasporic bauxites. Most bauxites occur within a lateritic crust formed by intense tropical weathering, as near-surface blanket deposits. Bauxite is typically extracted from open cut mines, and either processed at nearby refineries or transported to distant refineries, which can add substantial logistical costs to the production of alumina. About 80 percent of alumina refining outside of China is based on integrated bauxite mines. In China, approximately 65 percent of alumina refining is based on integrated sources.

Australia, China, Guinea and Brazil accounted for 29, 28, 17 and 11 percent respectively, of global bauxite production of 329 million mt in 2018. The five largest mines outside China

[3] Earnings from our investment in MRN are included in "Financial income."

represented around 43 percent of the western world bauxite production of 237 million mt.

Alumina is a significant cost element in the production of aluminium. The alumina market is competitive, but relatively few players hold a long position. China is the largest producing country representing approximately 57 and 54 percent of the global demand and capacity.

Alumina contract durations

Source: Hydro estimates

Alumina price

Percent of LME per mt alumina for medium term contracts

Bauxite and alumina price developments
In the alumina industry, pricing has been moving away from fixed percentages of the aluminium price to index pricing. Introduced in 2010, the Platts alumina price index reflects the fundamental supply and demand balance as well as general cost developments of the alumina market. The index continues to gain support in the industry and represents the main reference for contracts of various durations. Since 1990, average annual contract prices have risen from a level of around 12 percent of LME aluminium reference prices to above 22 percent on average for 2018. The Platts alumina index was strongly influenced by the Alunorte curtailment and United States sanctions against UC Rusal. Prices started the year at around USD 389 per mt and were close to USD 408 per mt at year end, or around 22 percent of the LME aluminum reference price at the time. To balance the world market in the wake of the Alunorte curtailment, China was a net exporter of alumina in 2018.

China imported 82.7 million mt on bauxite in 2018, 20 percent more than the previous year. Driven by new increasing mine production, imports from Guinea increased 38 percent from 2017 to 38.2 million mt, outstripping the 17 percent increase in imports from Australia (29.8 million mt). Those two countries accounted for 82 percent of China's bauxite imports. The first full year of exports after a government-imposed export ban was lifted in the middle of 2017 resulted in a significant increase of imports from Indonesia (7.5 million mt). Imports from Brazil fell 52 percent to 1.6 million mt. Imports from Malaysia decreased 92 percent to 0.5 million mt as a bauxite mining moratorium imposed since January 2016 was strictly enforced.

The price of bauxite imported into China in 2018 increased to an annual average of USD 53 per mt CIF China compared to USD 51 per mt CIF China in 2017.

Strategy and targets
At the time of authorising this report, the production embargoes on Alunorte as well as the embargoes on DRS2 by the Federal Court in Brazil, both civil and criminal, remain in force. The timing with regards to when the embargoes may be lifted remains uncertain. Once the embargoes are lifted, it is expected to take around two months to reach 75-85 percent of Alunorte's nameplate production capacity. The timing of a return to full production capacity at Alunorte depends on the commissioning process of DRS2 and the press filters.

The process to restore normal production at Alunorte is ongoing but the timing of a solution remains uncertain.

Safety
Bauxite & Alumina promoted several safety initiatives within the critical controls framework during 2018. These critical controls relate to machine protection, electricity, boilers and pressurized equipment, inflammable liquids and fuels, falls from height and confined space, and they include action plans.

Improve the commercial value of our product portfolio
We are continuing to optimize our global bauxite and alumina positions, including sourcing arrangements aimed at reducing logistical costs and improving margins. We also intend to continue increasing our share of alumina sales volumes at index pricing as old legacy LME-indexed contracts expire.

Expand our bauxite and alumina capacity
Hydro has attractive positions, enabling the potential expansion of low-cost alumina refining. These include production creep beyond nameplate capacity in Alunorte, the CAP joint venture for a potential new alumina refinery, and possible expansion of the Paragominas mine. Further development of these projects is mainly dependent on ongoing developments in the balance between industry production capacity and market demand.

Ambitions going forward
The continued production curtailment in Alunorte contributed to a challenging year. The process to restore normal production at Alunorte is our main priority. We will follow up and finalize the internal and external reviews of the refinery and its water treatment system, as well as realizing

the announced investment to the water treatment system at Alunorte.

In 2017, Hydro signed a Memorandum of Understanding (MoU) with Shell Brasil Petróleo LTDA, and also a Letter of Intent (LoI) with the state of Pará with the aim to replace a major part of our fuel oil consumption at the Alunorte alumina refinery with more climate and cost-efficient natural gas. Since then, both partners have been working close together to develop commercial, logistical and technical concepts to import LNG and supply Alunorte with natural gas. The licensing process with Brazilian authorities has started. The concept phase of the project is expected to be finalized in the first half of 2019.

We are committed to minimizing our environmental footprint, including fulfilling our rolling target aiming for 1:1 rehabilitation of areas available for rehabilitation over two hydrological seasons after release.

Mid-term strategic goals Bauxite & Alumina

	Ambitions	Medium-term target	Timeframe	2019 Target	2018 Target	2018 progress	Status
Better	Improve safety performance, strive for injury free environment	TRI[1] <1.7	2020	TRI 1.7	TRI 1.7	TRI 1.7	●
	Realize ongoing improvement efforts Better	BNOK 1.3	2019	[2]	BNOK 1.2	BNOK -1.0	●
	Shift alumina sales to PAX-based pricing	>85 % PAX[3]	2020	~75% PAX	~75% PAX	75-80% PAX[4]	●
	Maintain and comply with the ICMS regulatory framework renewed in 2015	Stable framework conditions	Long-term	In compliance	In compliance	In compliance	●
	Lift bauxite production at Paragominas	11 mill mt/yr	2018	[2]	11.6 mill mt/yr	6.2 mil mt/yr	●
	Lift Alumina production at Alunorte	7.0 mill mt/yr	2021	[2]	6.4 mill mt/yr	3.7 mil mt/yr	●
Bigger							
Greener	Deliver on reforestation ambition	1:1	Continuous	1:1	1:1	On track[5]	●
	Deliver on reforestation ambition	Eliminate historical rehabilitation gap	2020		Continuous progress	Completed, historical gap closed	●
	No reportable environmental incidents	0	Long-term	0	0	4[6]	●
	Develop plan for approval of infrastructure projects with postive impact on the social development in Barcarena	Establish project with positive impact on social development of the Barcarena municipality in Brazil	2020	First scrap collection facility in operation	First scrap collection facility in operation	Stakeholder dialogue started. Construction start July 2019	●

1) TRI, total recordable injuries per million hours worked, includes own employees and contractors
2) Affected by Alunorte situation
3) Based on annual sourced volumes of 2.3 million mt/yr
4) Based on sourcing volume of ~ 3.5 million mt for 2018
5) 1:1 rehabilitation of areas available for rehabilitation within two hydrological seasons after release. Revised definition of target takes into account the nature of the mining cycle and the time lag necessary to ensure quality rehabilitation to restore biodiversity
6) For more detailed information, please see note E2.3 to the Environmental statements

Green light: Ambition on track and on target; *Amber light*: Ambition behind plan, but on target; *Red light*: Ambition might not meet the medium-term target

Operations
Bauxite from Paragominas is mined in open pits and sorted and crushed into sizes suitable for transportation as slurry through a pipeline approximately 240 kilometers to Alunorte for refining into alumina. Bauxite from MRN is transported by vessel. Alumina processing begins by removing the water from the bauxite slurry, then mixing the bauxite with caustic soda at high temperatures and pressure. The resulting mixture is pumped into a digester, where a chemical reaction dissolves the alumina. This process produces a sodium aluminate solution, which is transferred into tanks to separate impurities through settling and filtration. The cooled sodium aluminate solution is then pumped into precipitators to grow alumina crystals, which are transferred to thickening tanks and further to fluid bed calciners to remove water, producing pure alumina.

Cost and revenue drivers
The main cost drivers for bauxite are labor, maintenance/consumables, electricity and fuel for mining equipment. These account for around 75 percent of the cash cost of mining activities. Labor, the largest cost factor, accounting for about 33 percent, is influenced by Brazilian wage levels and productivity developments. Maintenance/consumables are influenced by inflation and efficiency in operations.

The main cost drivers for alumina refining are bauxite, energy and caustic soda. These represent around 80 percent of cash costs. Energy costs are a mix of fuel, coal and electricity and represent around 30 percent of the total costs. Caustic soda represents around 15 percent of cash costs. In 2018, the prices of the main raw materials, including fuel, coal, electricity and caustic soda, increased compared to the previous year. Bauxite purchases from Paragominas, and those made under off-take agreements from MRN, are based on prices partly linked to LME prices and alumina market prices.

Commercial operations
When operating at full production capacity, Hydro has a long position in bauxite of 3-4 million mt and in alumina of approximately 2-3 million mt. Because of the Alunorte curtailment in 2018, Hydro had to source significant additional volumes of alumina externally. We are pricing bauxite on its own fundamentals to reflect high quality Brazilian bauxite. As mentioned above, in addition to Paragominas and our equity interests in the MRN bauxite mine, we have volume off-take agreements for Vale's 40 percent interest in MRN, which amounted to 5.8 million mt in 2018. The excess bauxite not consumed by Alunorte is sold to third parties.

In addition to Alunorte, we buy alumina from a number of external sources. The main external source is Hydro's contract with Rio Tinto Alcan (RTA) for the supply of 900,000 mt of alumina annually until 2030. In addition, we buy and sell alumina to optimize our physical alumina portfolio on a short and medium-term basis.
See section later in this report Financial review, Bauxite & Alumina for external volumes of bauxite and alumina purchased and volumes of alumina sold.

Technology and Innovation
Hydro's Bauxite & Alumina business area is continuously investing in a portfolio of innovative technology developments and R&D projects and initiatives, with the aim of improving Hydro's competitive position in the industry.

Hydro is using enhanced dry-stacking disposal technology, which includes an improved residue filtration step and in-situ mechanical compaction. Alunorte is now using press filtration technology before transporting the residue to the disposal area. The press filter technology produces a filtered cake with a lower moisture content, which allows for further in-situ mechanical compaction and storage at steeper slopes, thus reducing the disposal area requirements and its environmental footprint.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

The economic utilization of Alunorte' s bauxite residue is an important R&D program, in partnership with the national Brazilian entity SENAI (National Service of Industrial Apprenticeship) mineral research area. Hydro also works with the International Alumininium Institute's Bauxite & Alumina committee to monitor industry developments that could be applicable to Alunorte. Alunorte is committed to developing a product based on bauxite residue within the next three years.

Two other R&D programs are directed at minimizing the economic impact of the relatively high kaolinite content of Amazonian bauxite, which requires a high consumption of caustic soda at Alunorte.. These programs are designed to improve the solid-to-solid separation processes at the Paragominas beneficiation plant and to modify the bauxite digestion process at Alunorte. The expected result will be a significant reduction in Alunote's future operating cost, and an increase in the amount of Hydro's economically viable bauxite resources. Hydro is developing these programs together with external organizations.

Bauxite Production

Alumina Production

Alumina Position

On the Industry 4.0 front, both Paragominas and Alunorte are rapidly implementing a comprehensive portfolio of initiatives with good financial return, ranging from advanced analytics, process digitalization, automation and robotics. A disciplined process of screening is in place to allow correct prioritization of the identified digitalization opportunities.

Bauxite & Aluminum delivered several key initiatives in 2018, supporting Hydro's long-term strategy, such as the Alunorte debottlenecking concept and basic engineering.

Environment
The main environmental issues in Bauxite & Alumina are related to water management and effluents, deforestation, waste disposal, air emissions and greenhouse gases.

Disposal of bauxite residue at Alunorte is challenging due to large volumes and the alkaline nature of the liquid component of the residue. The residue is washed with water to lower the alkalinity and recover caustic soda for reuse. For more information, please see Technology and Innovation.

Emissions from Hydro's Alunorte refinery relate mainly to steam generation, which relies on coal and heavy fuel oil. During normal operations, the plant emits about 4 million mt of CO2 equivalents per year. Due to the embargo at Alunorte, the emissions were 2.6 million mt in 2018. For more information about the Alunorte situation, please see the dedicated section later in this report.

Hydro's bauxite mining at Paragominas involves removing vegetation and a layer of topsoil and overburden to extract bauxite deposits from eight-to-12 meters underground. As a result, mining operations disturb relatively large areas. Hydro's mine is in an area that is normally recognized as the deforestation belt around the central Amazon region. In the municipality of Paragominas, there has been a reduction in foreset area of more than 30 percent over a period of almost 20 years. Much of this occurred before the establishment of the Paragominas mine, and the area had been exposed to selective logging and clear cutting before commencement of operations in 2007. Reforestation and wildlife management at Paragominas are core elements of our sustainability strategy.

Although originally set for 2017, the 1:1 land rehabilitation target continues to apply, as it provides a solid driver for rehabilitation. It has, however, become a rolling target, aiming for a 1:1 rehabilitation of areas available for rehabilitation over two hydrological seasons after release. This revised definition takes into account the nature of the mining and rehabilitation cycles, and the time lag necessary to ensure quality rehabilitation to restore biodiversity. It also takes into account that land periodically needs to be set aside for temporary infrastructure to safely operate the mine. The 2020 target of closing the historical rehabilitation gap inherited from the former operator was achieved in 2018.

To increase our knowledge and to secure a science-based approach, the Biodiversity Research Consortium Brazil-Norway (BRC) was established in 2013. Please see Resource management under Viability Performance in this report for more information.

Solid waste production includes significant amounts of residues from the bauxite beneficiation process (bauxite tailings) and from alumina refining (bauxite residue, also known as red mud). Tailings are stored in dams where the particles settle, and the water drained. Separated water is clarified and reused in the process. Dams are systematically inspected by Brazil's national mining agency, and IBAMA, Hydro and third parties, including the Norwegian Geotechnical Institute (NGI). The terms of commitment include new programs, such as the speed-up of Alunorte's solid waste deposit rehabilitation project and new risk assessment studies and action plans.

Tailings from bauxite production

Tailings production decreased significantly in 2018 due to the Paragominas curtailment.

Bauxite residue from alumina production

Bauxite residue production decreased significantly in 2018 due to the Alunorte embargo.

The emerging reforestation gap is due to infrastructure areas made available in 2018 for rehabilitation, as well as failed areas of historical rehabilitation.

The new tailings system in Paragominas was completed in 2017. The new tailings dams are situated on a plateau where the mining has been finalized. The old tailings system is located in a shallow valley. The closure plan for the tailing dams was last reviewed in 2015, and Hydro expects to start the rehabilitation process after the tailings dams have settled. This takes a minimum of five years.

People
Bauxite & Alumina had 3,406 permanent and 183 temporary employees in its consolidated activities at the end of 2018, including trainees, apprentices and employees on leave. We strive for a safe working environment as a fundamental right of all employees. We believe that this, together with an engaged workforce, improves efficiency and results in lower operating costs. Employee development is also an important factor. Our internal performance and development process, My Way, and employee engagement index Hydro Monitor, are important tools to engage our people and enhance organizational performance and development. See the Viability performance section later in this report for more information. In 2018, about 96 percent of all employees participated in My Way.

Our Bauxite & Alumina Business System (BABS) has been used as the basis for implementing a standardized production system in our operations. The system is based on Primary Metal's AMBS system and promotes employee empowerment and development, and facilitates the sharing of best practices throughout the organization.

Diversity in all its forms is appreciated and valued throughout our organization. We regularly assess the status of our diversity efforts and target areas for improvement to reach our 2020 diversity targets. Much progress has been made in areas related to competence and cultural background. We continuously strive to improve our representation of females at all levels in the organization through our recruiting strategies and efforts to create a workplace with opportunities that appeal to both genders.

Society
Bauxite & Alumina's operations are located in the state of Pará, in northern Brazil, one of the least developed regions in the country. As one of the largest industrial companies in the state, Hydro is striving to make a positive difference by strengthening our business partners and the local communities where we operate. Read more about Hydro's CSR strategy in the section Viability Performance, later in this report.

To address the social issues in the regions where we operate, we reviewed and restructured our social programs during 2018. We are working to make our social projects more robust and effective, from short-term actions to long-term sustainable initiatives. A multitude of social programs are ongoing or under planning for Barcarena, Paragominas and the areas along the bauxite pipeline from Paragominas to Alunorte. In addition, representatives from the communities are welcome to visit the plants and to better understand the environmental and social processes.

The Barcarena region, where the Alunorte alumina refinery and Hydro's Albras smelter is located, ranks low on the Human Development Index (measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living), and has one of the highest levels of violence in the world. There is a lack of access to basic services, with the share of people with access to sanitation at less than 30 percent.

To support broad collaboration for social change in Barcarena, Alunorte has therefore committed BRL 100 million in local community investments through the new Sustainable Barcarena Initiative, which will be supporting local communities over the next 10 years. The initiative will establish an independent organization, bringing together local communities, and will provide a public platform for data monitoring and evaluation, and develop social and environmental projects. This initiative is closely linked to our CSR strategy, launched in 2017, and our emphasis on strengthening and enabling local stakeholders to drive change and development.

We have developed a more consistent and coherent strategy for community engagement, based on continuous and enhanced dialogue. A new volunteering program for employees has increased internal engagement and addressed community needs.

The bauxite pipeline crosses areas inhabited by traditional Quilombola groups in the Jambuacu Territory in Brazil. Hydro has an ongoing dialogue process with representatives of the group and is investing additional resources to improve its interaction with the group, including facilitation around conflict resolution. Still, there are potential conflicts related to certain Quilombola groups.

Bauxite extraction and alumina refining in Hydro

Hydro's commitment to safe and environmentally sound operations is universal and absolute. Following the rainfall and subsequent flooding of Barcarena in February 2018, Alunorte collaborated with local institutions to provide an emergency response to the neighboring communities of Burajuba, Bom Futuro and Vila Nova in Barcarena. About 2,000 families in these communities close to Alunorte have received medical assistance and clean water provided via third parties or directly from Hydro. Read more in the chapter "The Alunorte Situation".

The current grievance mechanism for Hydro's activities in Brazil was introduced in 2014. We are optimizing the mechanism to use it more actively in stakeholder engagement.

Within Bauxite & Alumina's supply chain, the most important risks include human rights, corruption, fraud and inappropriate working conditions. To better understand risks related to human rights, we will perform a full due diligence in 2019. Our sustainability metric is comprised of several elements, including promoting local content, mitigating social risk in the supply chain and screening all suppliers as part of a qualification process. Our goal is to complete the qualification of all suppliers by 2020.

Primary Metal

Industry overview
The basic raw material for aluminium is bauxite, which is refined into alumina. Aluminium smelting is a capital-intensive, technology-driven industry. Energy represents approximately 50 percent of the costs. As the world's largest consumer and producer of aluminium, China has a significant impact on market fundamentals. Global primary production amounted to roughly 64 million mt in 2018. In 2018, China accounted for 55 percent of worldwide primary aluminium consumption and 57 percent of corresponding production. India and the Middle East are also growing in importance in the production of aluminium.

High quality aluminium products are also derived from remelting and recycling of aluminium scrap. Aluminium scrap is generated both in the production (pre-consumer) and in the use (post-consumer) of aluminium products. Around 70-75 percent of all aluminium produced since the Hall-Heroult process was invented in 1886 is still in use[4].

Aluminium is used in a variety of applications in several industries. The major consumer segments are transportation, building and construction, packaging and foil and electrical applications. The major consuming areas are China, North America, Western Europe, Japan and the rest of Asia.

Demand for aluminium products in mature markets like North America and Europe is normally in line with economic developments, although with greater volatility. However, substitution for steel and other metals by aluminium, in particular for automotive applications, contributes to higher growth levels and is a key fundamental driver underlying increasing demand in aluminium markets. In recent years, global demand has exceeded the growth in GDP and is expected to continue to do so in the medium term. Consumer demand and continued infrastructure investment in China are expected to drive global demand growth in primary metal in the range of 2 to 3 percent for 2019 and around 3 percent over the coming 10 years, despite an expected lower pace of global economic development compared to the previous decade. Primary demand is expected to grow 1 to 3 percent in the world outside China in 2019, with largely stable macroeconomic development and increasing market penetration of aluminium components within the transportation market segments.

Although growth in the Chinese economy is slowing, the growth in aluminium consumption continues to outpace most other commodities. However, despite almost flat capacity development throughout 2018 in China, the structural oversupply in China amid weaker domestic demand raised the export of semi-fabricated products to above historical levels.

Global aluminium consumption* by region 2018

Total market 91.0 million mt

Global aluminium consumption* by end use 2018

Total market 91.0 million mt

[4] The actual share depends on lifetime assumption for aluminium products in different applications and in different regions of the world.

Top world primary aluminium producers in 2018

Aluminum price

CRU global business operating cost curve by smelter

Source: Republished under license from CRUInternational Ltd

Structural developments
The 10 largest aluminium companies in the world represent close to 50 percent of global aluminium production, and the 10 largest Chinese aluminium companies now account for around 34 percent of the world's primary production in 2018. Chinese producers focus primarily on supplying the Chinese markets. Private companies such as Hongqiao group, Xinfa and East Hope have grown significantly in the last several years. In recent years, state-owned companies in China such as Chalco have also increased in size, due to restructuring efforts and through incentives for the Chinese state-owned companies. Outside China, the strongest production growth has been among companies active in India, in particular Vedanta, and to a minor degree the Middle East. Alcoa has reduced its production due to smelter closures, in particular in North America.

Aluminium price developments
Primary aluminium is traded on several metal exchanges, but primarily the London Metal Exchange (LME). The Shanghai Futures Exchange (SHFE) has grown in importance for international trade of standard ingots produced in China. Prices quoted on the SHFE include a value-added tax of 16 percent. China has an export tax of 15 percent on primary aluminium, and a 13-15 percent VAT tax rebate on the export of semi-fabricated and finished aluminium products. In May 2015, the export tax was eliminated for several alloyed products while being maintained for pure primary aluminum ingots. No changes were made for aluminium and aluminium products during 2018. This development indicates that China intends to continue to discourage the export of pure primary aluminum while encouraging the export of higher value-added products.

LME aluminium prices are heavily influenced by macroeconomic and market developments. Prices have been volatile in the period following the historic decline during the financial crisis of 2008/2009. Through 2015, prices remained at a level that resulted in smelter closures in the US as well as in China. From early 2016, prices increased, and this trend continued through most of 2018, although with significant volatility throughout the year. Prices decreased toward the end of the year, due largely to weaker macro sentiment. The main cost driver was the higher and volatile cost of alumina, due to the Alunorte refinery curtailment and to other disturbances to global alumina production. Carbon and energy costs increased as well. Continued strict capacity control in China discouraged capacity expansions during 2018. The capacity control measures implemented mostly in 2017 resulted in closures in capacity, mainly privately owned, due to their classification as so-called "illegal expansions," or to their contribution to winter pollution. See Market developments in the Financial and operating review section of this report for further information on price developments for 2018.

Premiums outside China affect the incentive for Chinese exports, and Chinese semis export increased throughout 2017 and 2018. Arbitrage opportunities are expected to continue to occur in the future and will influence the size of exports of semi-fabricated products from China, and consequently also metal prices going forward. There has been an increase in trade and anti-dumping cases following increases in Chinese exports of semi-fabricated products, in particular for imports to the US from China. Significant uncertainty remains with regard to the implementation of further trade restrictions in 2019.

In March 2018, the US administration announced a 10 percent tariff on aluminium imports to the US, effective from March 23. Argentina and Australia are exempted from the 10

percent tariff, although Argentina will be covered by a quota. On September 30, the US, Canada and Mexico came to an agreement on a revised trade deal, called the United States Mexico Canada Agreement (USMCA), replacing the 1994 NAFTA agreement. The USMCA is expected to be ratified during 2019 but does not address the 10 percent tariff on imported aluminium.

In April 2018, the US Department of Treasury's Office of Foreign Assets Control (OFAC) issued a sanctions list that included Russian individuals and companies including the Russian aluminium company UC Rusal, controlled by Oleg Deripaska. The implementation of the sanctions was postponed at several instances throughout the year, but added to the overall uncertainty and volatility of aluminium and alumina markets throughout 2018. In December 2018, OFAC submitted a notification to the US Congress of its intention to remove Rusal from the sanctions list, and despite attempts by the Democrats to block the removal of the sanctions, the sanctions were lifted on January 27, 2019.

China is still working actively to develop new domestic applications for aluminium, to make use of its properties and to reduce overcapacity, such as applications within transport/railways. See the Risk review section in the Board of Directors' report for the discussion on our exposure to competition from China.

Cost developments
World average production costs (business operating costs) increased in 2018 primarily due to higher operating costs, both inside and outside China. Operating costs increased due to higher costs for alumina, power, labor and carbon in particular. Currency movements also affected the relative position of companies on the cost curve. In the latter part of the year, the combination of high alumina prices and falling LME prices resulted in pressure on profitability for the least competitive smelters, typically located in China.

Strategy and targets
A key strategic focus for Primary Metal is the continuous improvement of the efficiency of our aluminium production system, while we constantly address the cost challenges facing our business. We have a strong commitment to ensuring a safe work environment and a highly motivated and engaged work force. In order to secure the viability of our operations over time, we focus on business opportunities that enhance our cost position. We will also maintain our technological leadership, which contributes to lower operating costs, reduced emissions, and ensures our attractiveness as a partner for world-class projects within an industry with sound long-term fundamentals.

Maintain our focus on safe, sustainable business operations
Primary Metal focus on key activities to ensure safe and efficient operations. These include systematic HSE training of operators and managers, and regular risk assessment of operator tasks and the work environment. We monitor and continually strive to reduce greenhouse gas emissions and waste to landfill. As part of our strategic workforce planning, we aim to recruit competent resources to secure future requirements for managers and technical specialists.

Further improve our average smelter-cost position
Primary Metal's core strategy is focused on the continuous improvement of our aluminium production portfolio. We are targeting annual improvements of NOK 1 billion for our entire portfolio, compared to baseline 2015, under the "Better Primary Metal" improvement ambition. This includes increasing production capacity at our existing aluminium plants through proven technological developments, in addition to continuous operational improvements, fixed and variable cost reductions, and capital discipline. In 2018, Primary Metal reduced production at the Albras aluminium plant , driven by the curtailment of the Alunorte refinery. The reduced availability of alumina from Alunorte also resulted in the external sourcing of alumina of a different quality, which contributed negatively to operational performance at the affected metal plants. We expect this set-back to continue in 2019, until Alunorte and Albras resume production.

During 2017 and 2018, Primary Metal launched targeted Industry 4.0 initiatives, focusing on advanced analytics, automation, robotics, and digital and predictive maintenance. These efforts aim at enabling further improvements from digital initiatives.

Optimize our position in alumina, power, carbon and other key raw materials
Primary Metal sources the majority of its alumina from Bauxite & Alumina's equity position. In March 2018, 50 percentage of Alunorte's production was temporarily closed due to environmental regulations in Para, Brazil.

Primary Metal sources energy from Hydro's captive power position, with roughly two-thirds of our electricity usage based on hydropower. We are continually working to secure competitive power arrangements as our long-term contracts expire. We will also continue to focus on our procurement and supplier portfolio for carbon and other key raw materials.

Strong performance culture

Mt per employee*

* Includes all permanent employees within the Primary Metal business area plants. Albras is excluded due to the 2018 curtailment.

Advance our operational excellence and technological leadership
Primary Metal focuses on extracting measurable benefits from the application of our Aluminium Metal Business System (AMBS), a methodology designed to ensure best practices and operating efficiencies across our portfolio. AMBS is a key enabler underlying our improvement efforts and incremental increases in our production volumes. Primary Metal is also developing new proprietary smelting technology with the aim to improve our cost

competitiveness, strengthen our environmental performance and support our long-term growth ambitions. This includes the 75,000 mt Karmøy technology pilot plant utilizing our next generation technology, HAL4e, which targets energy consumption of 12.3 kWh/kg. Experience gained from the pilot is expected to contribute to further incremental capacity increases and productivity improvements in our existing portfolio.

Focus on selective growth projects
Primary Metal's growth ambitions are directed toward projects with the potential to improve Hydro's cost position and smelter portfolio, while at the same time maintaining a strong focus on sustainable development. The Karmøy technology pilot started metal production in January 2018, with safety and quality prioritized in start-up and operations. Further implementation of Industry 4.0 and control platform elements will continue in 2019, as will the rollout of spin-off elements from the pilot to other Hydro operations. The pilot plant can serve as a basis for potential future expansions of primary metal production. In 2017, Hydro made an investment decision to upgrade and start up the second production line at Hydro Husnes in Norway in 2020, increasing production by around 95,000 mt.

Ambitions going forward
Hydro aims to continuously strengthen its smelter portfolio by maintaining a strong focus on sustainable cost development and increased productivity. We will continue to work on lean smelter operations, operational excellence and safety. The ongoing development of next-generation technology, HAL4e, will provide a strong technological basis for continued organic growth, increased efficiency and lower emissions.

Mid-term strategic goals Primary Metal (including Metal Markets)

	Ambitions	Medium-term target	Timeframe	2019 Target	2018 Target	2018 progress	Status
Better	Improve safety performance, strive for injury free environment	TRI[1] <2	2020	TRI < 2	TRI < 2	TRI 3.8	●
	Realize ongoing improvement efforts Better Primary Metal	BNOK 1	2019	[2]	BNOK 0.7	BNOK ~0	●
	Continued employee participation rate of more than 98 percent in My Way, Hydro's enhanced people perfomance and development system	98 percent	Long-term	98 percent	98 percent	95 percent	●
	Extend technology lead with Karmøy technology pilot	Start production	2H 2017			Jan 29, 2018	●
	Extend technology lead with Karmøy technology pilot	Full ramp-up	Q2 2018			Jun 27, 2018	●
Bigger	Realize technology-driven smelter capacity creep	200,000 mt/y	2025	55,000 mt/yr[3][4]	43,000 mt/yr[4]	35,000 mt[4]	●
Greener	Continued improvement of exposure to work environment factors	5 percent annual improvement	Long-term	5 percent	5 percent	6 percent	●
	Continuously reduced specific GHG emissions/mt from electrolysis	EU benchmark	Long-term	1.57	1.57	1.60	●
	Increase recycling of post-consumer scrap	>150,000 mt/yr	2020	110,000 mt/yr[3]	100,000 mt/yr	104,000 mt/yr	●

1) TRI, total recordable injuries per million hours worked, includes own employees and contractors
2) Affected by Alunorte situation
3) Original target of 150,000 mt/yr will not be met by 2020
4) Excludes Albras

Green light: Ambition on track and on target; *Amber light*: Ambition behind plan, but on target; *Red light*: Ambition might not meet the medium-term target

Operations
Hydro's primary aluminium plants have reduction facilities with potlines and casthouses, where liquid and remelted aluminium is cast to form value-added products such as extrusion ingot, primary foundry alloys, sheet ingot and wire rod, in addition to standard ingot.

Cost and revenue drivers
The main cost drivers for the production of primary aluminium include alumina, power and carbon, which together comprised about 80-85 percent of the cash costs of electrolysis metal in 2018. Approximately two metric tons of alumina are required to produce one metric ton of aluminium, representing about 40-45 percent of the production cost of primary aluminium. For primary production, energy represents on average about 20-25 percent of the operating costs. Carbon anodes consumed in the smelting process account for approximately 15-20 percent of the total production cost of primary aluminium.

Realized aluminium prices are the most important revenue driver. Prices are fixed on average one month prior to

production. As a result, and due to the hedging of product inventories, Hydro's realized aluminium prices lag LME spot prices by around 1-2 months.

Competitive strengths

- Worldwide production network of cost-efficient primary aluminium facilities including the Norwegian plant in Sunndal, which is the largest and most modern primary metal plant in Europe, and Qatalum, our world-class smelter in Qatar which has a competitive position in the first quartile of the industry's cost curve
- Competitive position on the industry cash-cost curve
- Culture of continuous improvement and solid track record of continually upgrading efficiency of smelter portfolio
- Most primary aluminium output sold in the form of value-added casthouse products
- Captive alumina position with more than 100 percent coverage, dependent upon full capacity at the Alunorte alumina refinery
- Robust power position, largely based on hydropower. Substantial coverage of current production until 2030 and beyond
- Technological leadership and world-class smelter technology

Aluminium smelter system

Hydro is one of the world's largest producers of primary aluminium, with installed capacity in 10 wholly or partly owned plants. In 2018, we produced around 2 million mt of primary aluminium, which is around 250 kmt below full capacity, affected by the partial curtailments at the Husnes plant in Norway and the Albras plant in Brazil. An investment decision to upgrade and restart the curtailed capacity at Husnes was made in 2017, and first metal is expected in the first half of 2020. Starting in April 2018, around 50 percent of the Albras plant's yearly production was curtailed due to the Alunorte situation.

Primary aluminium production

See the section, Financial and operating performance, for actual electrolysis and casthouse production for the years 2018 and 2017.

Internal supply contracts between our hydropower production operations and our aluminium metal business covered about half of the energy consumption of our wholly owned Norwegian smelters in 2018. The remainder was mainly covered by an external supply contract with Statkraft, a Norwegian electricity company. The contract will expire in 2020.

Hydro has entered into various new power supply contracts, adding up to a total annual supply of 8.46 TWh for the period 2021-2030, of 5.65 TWh for the period 2031-2035, and of 5.11 TWh for the period 2036-2039. This secures a significant part of the power consumption required by our Norwegian smelters for these periods.

Electricity for Qatalum is provided by an integrated natural gas-fired power plant supplied with gas by Hydro's joint venture partner, Qatar Petroleum. The rest of the global joint ventures are covered under medium to long-term contracts, expiring between end-2021 and end-2030.

Technology and innovation

Technology development and innovation are important pillars for Primary Metal to develop future benchmark technology platforms for aluminium production and to lift performance in its existing metal plants. The successful start of the Karmøy technology pilot in 2018 was an important milestone, introducing our next generation technology platform for electrolysis with considerably increased efficiency and performance.

The Karmøy technology pilot is now operating at full capacity, producing the world's most climate-friendly and energy-efficient aluminium. Furthermore, the Karmøy technology pilot is verifying a broad range of technical innovations that will provide spin-off effects for Hydro's other metal plants, helping to increase efficiency and reduce the climate footprint of Hydro's production of primary aluminium.

Environment

Aluminium smelting is an energy-intensive process. However, approximately 70 percent of the electricity used in Hydro's aluminium plants is provided by hydropower. A substantial portion of the remainder (around 20 percent) is provided by natural gas. On a world-wide basis, electricity used for aluminium production based on hydroelectric power is about 36 percent, and 8 percent is based on natural gas. The Intergovernmental Panel on Climate Change (IPCC) recognizes natural gas as an important transition fuel that can help reduce global temperature increases.

Primary Metal is Hydro's largest consumer of energy and has the largest combined direct and indirect greenhouse gas emissions. In 2018, direct greenhouse gas emissions from the company's primary metal production, based on ownership equity, amounted to 3.6 million mt. Indirect emissions from electricity production was 3.7 million mt. Direct emissions of

CO2 equivalents per mt of aluminium from electrolysis was 1.60, up from 1.59 in 2017. The main source of direct CO2 emissions from Hydro's smelters is the consumption of carbon anodes.

See the Viability Performance section later in this report for more information regarding our climate strategy and how aluminium products can contribute to reduced energy consumption and greenhouse gas emissions.

GHG emission intensity - electrolysis

Mt CO2e per mt aluminium

Greenhouse gas (GHG) emissions from the electrolysis process from Hydro's smelters, excluding Neuss in Germany

Spent potlining (SPL) from aluminium production

Thousand mt

The volumes of spent potlining (SPL) varies with the relining of smelter cells which is normally done every 4-7 years for established smelters. Furthermore, opening new production lines and closing down production lines will give fluctuations in the aluminium production, and - due to the cyclical nature of SPL - a 4.7 years time lag in the SPL volumes. Hence SPL is normalilzed with aluminium production with a 5-year rolling average as the best estimate of a trend line.

Production of primary aluminium generates secondary raw materials, by-products and waste. Hydro is continuously working to increase sustainability through reducing material loss and increasing internal reuse and recycling. By cooperating with research and industry partners, Hydro is maintaining and developing sustainable material handling throughout the value chain. Hydro's excess materials have proven valuable for industrial partners manufacturing cement, mineral wool, metals and construction materials.

The Norwegian Environmental Agency has in recent years renewed the environmental permits for Hydro's aluminium plants in Karmøy, Høyanger and Sunndal in Norway.

People

Primary Metal, including Metal Markets, had 4,858 permanent employees in its consolidated activities and 673 temporary employees, including apprentices and trainees, at the end of 2018. We have a responsibility to provide a safe work environment and believe that this also promotes efficiency and lower operating costs. We drive safety improvements by systematically reducing risks, training of personnel and regular follow-up by line management and safety delegates. All injuries and high-risk incidents are investigated to find root causes and share lessons learned between plants. Through deployment of our Work Environment Risk Assessment (WERA) process, we have reduced employee exposure to hazards within our operations by 5-10 percent annually in the last 10 years. This includes reduction of exposure to noise, dust, heat, fumes, chemicals and vibration. As hearing impairment has been increasing, focus has also been on reducing noise. Primary Metal has a certified environmental management system (ISO 14001) to ensure compliance with environmental permits. Environmental incidents and emissions above limits are investigated enabling learning to avoid reoccurrence.

8 DECENT WORK AND ECONOMIC GROWTH

Our AMBS system helps to ensure empowerment and development of our people across our organization. AMBS has provided a foundation for previous cost reduction programs, resulting in NOK 2.6 billion delivered between 2010 and 2015, and is a key tool in our current improvement ambition of NOK 1 billion.

My Way, our internal performance and development process, and Hydro Monitor, our employee engagement index, are important tools to engage our people and enhance the performance and development of our organization. In 2018, more than 95 percent of Primary Metal's employees (including Metal Markets) participated in My Way. Hydro Monitor is normally run every second year, next in 2019. The score on our engagement index for 2018 was 81 percent.

Diversity in the organization is important to us, in particular related to age and gender. A comprehensive diversity awareness training program has been run at management level at all plants, and will be further introduced at more levels in each unit. In 2018, about 25 percent of the technology graduates (MSc) were women. We also emphasize the need to recruit more female operators and promote the workplace as fit for both genders, motivating young women to seek vocational training in the process industry.

Society

Hydro is one of the most important business enterprises in several of the communities where our aluminium plants are located. A good dialogue with local residents is considered essential for the mutual benefit of our business and the societies in which we operate. For information about what we do to improve social conditions in Barcarena, the location

of Hydro's Albras smelter and Alunorte alumina refinery, please see The Alunorte situation section later in this report.

In Qatalum, Qatar, the large majority of employees are migrant workers. We strive to secure good working conditions for people employed directly as well as following up the conditions for contractor employees.

Hydro's supplier requirements regarding corporate responsibility form an integral part of our procurement process. Several of the suppliers for our metal production operations are based in developing countries dealing with certain environmental and social issues. We have risk-based mechanisms in place to assess compliance with local regulations and our own requirements, including on-site audits and follow-up actions.

Aluminium smelting process

Primary aluminium is produced in reduction plants where pure aluminium is formed from alumina by an electrolytic process. This process is carried out in electrolytic cells, in which the carbon cathode placed in the bottom of the cells forms the negative electrode. Anodes, which are made of carbon, are consumed during the electrolytic process when the anode reacts with the oxygen in the alumina to form CO_2. The process requires electric energy, about 14 kWh per kilo aluminium produced in modern production lines.

Plant	Country	Employees (per Dec.31)	Electrolysis capacity (000 mt) [1)2)]	Casthouse capacity (000 mt)	Main products	Key characteristics [3)]
Karmøy	Norway	516	271	370	extrusion ingot, wire rod	· Two prebake lines · R&D center and rolling mill · Technology Pilot fully ramped-up in 2018
Årdal	Norway	550	200	232	sheet ingot, foundry alloys [4)]	· Two prebake lines · Technology and competence center · Substantial anode production
Sunndal	Norway	671	408	525	extrusion ingot, foundry alloys	· Two prebake lines · R&D center metallurgy and casting · Largest and most modern plant in Western Europe
Høyanger	Norway	157	66	120	sheet ingot	· One prebake line
Husnes	Norway	272	189 [5)]	200	extrusion ingot	· 100% Hydro owned from Nov 2014 · Decision to start-up idle electrolysis capacity (95 kmt)
Slovalco (55.3%)	Slovakia	504 (100% basis)	175 (100% basis)	200 (100% basis)	extrusion ingot, foundry alloys	· Joint venture with Penta (Slovakia) · Long-term power contract expiring end of 2021 · One prebake line
Tomago (12.4%)	Australia	941 (100% basis)	74	75	standard ingot, extrusion ingot	· Joint venture with RTA and GAF · Long term power contract expiring in 2028 · Largest producer in Australia · Three prebake lines
Qatalum (50%)	Qatar	1103 (100% basis)	318	332	extrusion ingot, foundry alloys	· Joint venture with Qatar Petroleum · 40 year gas supply contract expiring in 2049 · Among the world's lowest cost smelters · Two prebake lines
Alouette (20 %)	Canada	872 (100% basis)	122	150	standard ingot	· Joint venture with RTA, AMAG and IQ/Marubeni · Long term power contract expiring end of 2030 · Is a first quartile smelter on the global cost curve · Largest producer in North America · Two prebake lines
Albras (50 %)	Brazil	1152 (100% basis)	460 [6)] (100% basis)	460 (100% basis)	standard ingot	· Joint venture with NAAC · Long term power contract expiring end of 2024 · Largest producer in South America · 4 prebake lines

1) Production and casthouse capacity for part-owned companies represents our proportional share. Slovalco and Albras are fully consolidated in terms of volumes and financial results. Karmøy includes the new Pilot reduction line.

2) In addition to the production capacity indicated in the table above, Rolled Products' Neuss smelter located in Germany has an annual electrolysis capacity of 235,000 mt.

3) See also discussion regarding power supply for our wholly owned Norwegian smelters and additional information relating to power supply for certain other plants.

4) Curtailment of one foundry alloy line from the middle of 2012.

5) Actual production impacted by curtailment of about 50 percent of capacity in the first quarter of 2009. Restart decision made in 2017, full production expected in 2020.

6) Actual production impacted by curtailment of about 50 percent of capacity in April 2018.

Metal Markets

Strategy and targets
Hydro's flexible and extensive multi-sourcing system enables us to rapidly adjust our remelt and recycling production to market demand. We intend to continue capitalizing on this flexibility to secure our market position and create additional value on top of LME prices with our production capacity. We will also use this competitive advantage to optimize our casthouse utilization and margins. By increasing sourcing and recycling of post-consumer scrap, we will improve our profitability and contribute to reaching our ambition to become carbon-neutral in 2020. We will do this by converting the scrap metal into products for the low-carbon circular economy. In 2018, we sold certified sustainable products and will continue to further increase capacity in this segment. The global optimization of Qatalum sales volumes continues to be a key priority.

Metal Markets' mid-term strategic goals are included within Primary Metal's mid-term strategic goals.

Focus on margin management
Optimizing product premium margins in our primary casthouses and stand-alone remelters will continue to be at the top of our agenda. This includes shifting production toward higher premium alloys, optimizing remelting activities in response to market developments, premium pricing and the global optimization of product sales towards stronger markets. We will continue implementing key product strategies including strengthening our technical resources and enhancing our market team and key account approach.

Grow recycling capabilities
We have built a strong position in the metal products markets to optimize the capacity of our integrated casthouses and stand-alone remelters, offering value-added products. Our ambition is to strengthen our position in aluminium recycling to improve our cost base and reduce our carbon footprint. We have during the last couple of years invested to increase recycling capacity in several of our stand-alone remelters and acquired a scrap shredding and sorting company in Dormagen, Germany. In 2018, we invested in a new melting furnace in Luce, France, and in improving the casting pit operation in Deeside, UK. We also initiated investments to increase recycling capacity in our Spanish facility in Azuqueca, and to acquire a new melting furnace in Slovalco, to recycle customer scrap. We are supporting Extruded Solutions and Rolled Products in their recycling ambitions developing a broad collaboration network across Hydro. With implementation of our global scrap network, we will improve communication and cooperation between the regions, generating synergies in our operations. We plan to further increase our capability and capacity to use post-consumer scrap and other types of contaminated aluminium, and identify new sources of raw materials. Furthermore, we will continue to increase sales of recycling-friendly alloys from our remelters, supported by the launch of our 75R certified low-carbon aluminium product in 2017. In 2018, we entered into an agreement to deliver our entire production of 75R to Extruded Solutions, until 2020.

Risk management
We will continue to secure the value of our commercial portfolio by hedging price risk exposures within Hydro's upstream and downstream businesses, mainly resulting from time lags between our manufacturing process and the pricing of products to our customers.

Ambitions going forward
Our vision is to be the preferred partner for casthouse products and services. We will strengthen our focus on enhancing product premium margins by utilizing the flexibility of our multi-sourcing system to manage our global product portfolio in an optimal way. We will continue our strong focus on safety and risk management, and maintain firm discipline on operating costs and capital allocation.

European premium development*

Indexed, 2003 = 100

Source: Hydro.
*Premiums above LME for key product categories in Europe excluding wire rod and Neuss production

Sales of casthouse value added products and ingot trading

Million mt

Operations
Metal Markets is responsible for all sales and distribution activities relating to products from our primary metal plants and our stand-alone remelters. We operate seven remelters, which recycle mainly scrap, but also standard ingot[5] into new products. We also market metal products from our part-owned smelters and third parties, and engage in other sourcing and trading activities, including hedging activities on behalf of all business areas in Hydro.

Cost and revenue drivers
Our results are predominantly affected by the operating results of our stand-alone remelters, margins on sales of third-party products and results from ingot and LME trading activities.

Revenues for our stand-alone remelters are influenced by volumes and product premiums over LME. Costs are driven by the cost of scrap and standard ingot premiums over LME, freight costs to customers and operational costs, including energy consumption and prices.

Our results can be heavily influenced by currency effects[6] and ingot inventory valuation effects.[7]

Competitive strengths
- Leading worldwide supplier of extrusion ingot, sheet ingot, foundry alloys and wire rod
- High share of value-added products
- Extensive multi-sourcing system including broad network of primary casthouses, stand-alone remelters and partly owned primary sources
- Strong recycling capabilities, including world-leading scrap sorting technology
- Flexible sourcing system enabling significant, rapid and cost-effective volume adjustments
- Strong market position in U.S. and Asia through Qatalum volumes
- Commercial expertise and strong risk management competence enabling us to secure manufacturing margins

Remelting
We have a network of seven stand-alone remelt plants that convert scrap metal and standard ingot into extrusion ingot. We have five plants in Europe and two in the U.S. These plants have total capacity of about 0.6 million mt, of which roughly 0.4 million mt is located in Europe. Our remelters in Europe are in Luxembourg, the United Kingdom, Germany, Spain and France. In addition, we operate the scrap shredding and sorting plant in Dormagen, Germany, with scrap capacity of 36,000 mt. Total remelt activity, including remelted metal from casthouses integrated with our primary metal plants and third-party sourcing, has historically represented about half of our total sales of metal each year. However, this has been reduced in recent years to adjust to the market balance and to improve margins. In addition to remelting process scrap returned from customers, we purchase pre- and post-consumer scrap from third parties. Standard ingot is procured globally under a combination of short and long-term contracts.

Sourcing and trading
To optimize the global standard ingot portfolio, we source standard ingot for remelting in Hydro's remelters and primary casthouses from third parties, as Hydro's production of standard ingot goes to other regions to optimize logistics. Third-party contracts are also entered to optimize our total portfolio position and to reduce logistics costs. In addition, we sell standard ingot to external customers.

Our main risk management objectives are to achieve an average LME aluminium price on primary metal production, matching the average customer pricing pattern, and to secure margins in our mid-stream and downstream businesses. Our sourcing and trading operation acts as an internal broker for all LME-hedging transactions by our business units in order to consolidate Hydro's exposure and reduce transaction costs.[8]

Markets, products and customers
Most of our aluminium is sold in the form of value-added casthouse products such as extrusion ingot, sheet ingot, foundry alloys and wire rod. Our product with the highest volume is extrusion ingot, which is sold to extruders producing aluminium profiles. The most important end-use segments include the building and construction industry, transport and general engineering. Our key market region for extrusion ingot is Europe. However, the Asian and U.S. markets are also important markets for Hydro-selling units from Qatalum and Tomago. Other important markets for Qatalum include Turkey, the Middle East and Australia/New Zealand.

Foundry alloys are sold to foundries producing cast parts primarily for the automotive industry, with Asia being a significant market for this product, in addition to Europe, which is our largest market. Sheet ingot is sold to European rolling mills, with packaging and transportation as the most important end-use segments. Wire rod is sold to wire and cable mills in Europe for power transmission and other electrical applications.

In addition to marketing our own products, we have commercial agreements to market products from part-owned aluminium plants, including full marketing responsibility for all of the casthouse production at the plants in Qatar and Slovakia.

Our regional market teams are key to our customer approach, delivering commercial, technical, logistical and scrap conversion services. Optimized solutions, such as our customer service programs and online customer portal, add further value and help build and reinforce customer relationships.

[5] Aluminium standard ingot is a global aluminium product traded on the London Metal Exchange (LME).
[6] Currency effects are comprised of the effects of changes in currency rates on sales and purchase contracts denominated in foreign currencies (mainly U.S. dollars and Euro for our Norwegian operations) and the effects of changes in currency rates on the fair market valuation of dollar denominated derivative contracts (including LME futures) and inventories, mainly translated to Norwegian kroner. These amounts can be very substantial. Hydro manages its external currency exposure on a consolidated basis in order to take advantage of offsetting positions.
[7] Ingot inventory valuation effects are comprised of hedging gains and losses relating to standard ingot inventories in our metal sourcing and trading operations. Increasing LME prices result in unrealized hedging losses, while the offsetting gains on physical inventories are not recognized until realized. In periods of declining prices, unrealized hedging gains are offset by write-downs of physical inventories.
[8] These hedging activities, which are designed to mitigate cash exposures, can generate significant underlying accounting effects, partly due to asymmetrical accounting treatment.

Technology and innovation
Innovation and development are carried out in close collaboration between our customers, production units and R&D. We emphasize three main areas: the quality of our products, the efficiency of our production system and the development of new alloys. Our casthouse production process is based on our advanced proprietary casting technology, developed by the fully-owned equipment producer Hycast and our R&D organization.

Quality improvements are closely linked to our customer technical service, which addresses customer needs while improving our own casthouse process. We develop new alloys with distinct properties to support the development of new or enhanced applications within industries such as automotive, building and construction, and electronics. This work begins with developing an understanding of metallurgical processes that forms the basis for sample compositions and production methodologies carried out in laboratory or test production facilities. Finally, full-scale testing is often completed with customers and/or end users.

Recycling of post-consumer scrap is an important wat we reduce costs, increase capacity utilization and reduce the carbon footprint of our products. Our casting and alloy expertise enables us to produce products that can be recycled and used as raw materials for high quality semi-finished products. Developing products that optimize the use of recycled material is another focus area.

In 2017, Hydro launched its first certified sustainable products for the low-carbon, circular economy:
- 4.0 is produced by hydropower-based aluminium plants, and has a guaranteed maximum carbon footprint of 4 kg CO2/kg aluminium
- 75R is produced at remelters, and has a guaranteed minimum post-consumer scrap content of 75 percent

During 2018 we sold certified sustainable products and will continue to further increase capacity in this segment.

Environment
Aluminium can be continuously recycled without degradation in quality and requires only 5 percent of the energy necessary for primary aluminium production. Depending on cost and quality differences between standard ingot and aluminium scrap, recycling can be commercially attractive and provides significant environmental benefits. These include conserving energy and other natural resources, reducing greenhouse gas emissions, reducing land encroachment related to bauxite mining and alumina refining and reducing landfill. However, most of the aluminium produced today is used in long-life products. Most of the raw material for our recycling comes from process scrap from our own production and from our customers.

In 2018, Hydro recycled 1.3 million mt of aluminium on a combined basis, up 4 percent compared to 2017.[9] Of this, 161,000 mt was post-consumer scrap, an increase of 6 percent from previous year.

People
Please see Primary Metal for information about processes and performance relating to people for Metal Markets.

Society
Metal Markets' operations are either co-located with larger Hydro operations or are relatively small stand-alone operations with limited direct social impact on the communities where they are located. See Primary Metal for information relating to our supplier requirements regarding corporate responsibility.

Rolled Products

Industry overview
The aluminium rolled products industry is characterized by economies of scale, with significant capital investments required to achieve and maintain technological capabilities and to meet customer qualification standards.

The worldwide consumption of rolled products amounted to approximately 27 million mt in 2018. Foil, beverage cans and transport were the largest segments. Europe and North America each account for around 20 percent of world consumption while China, the largest single market, represents around 35 percent. The five largest producers in Western Europe supply about 70 percent of the European market.

The industry was influenced by continued market uncertainty in 2018. This was due to the import tariffs on aluminium imposed by the U.S. administration, Rusal sanctions and the Alunorte situation.

The export of semi-fabricated and fabricated aluminium products from China to the rest of the world has steadily increased over the last several years, driven by production overcapacity as well as by export tax rebates on some semi-fabricated products. Several countries have initiated, or are considering, anti-dumping measures on Chinese imports. The U.S. imposed an import duty of 10 percent on aluminium, which has redirected some Chinese export volumes to other regions, including Europe.

See the Risk review section for the discussion on our exposure to competition from China.

[9] Recycling activities take place in both our Metal Markets and Rolled Products operating areas. Amounts presented reflect the combined activity of both business areas.

Strategy and targets
We prioritize efforts to reinforce safe and reliable operations and sustainable business practices together with measures aimed at increasing efficiency and reducing costs.

Differentiation through innovation in products, processes and services continues to be a key element of our strategy to promote Hydro and aluminium through value-adding products and solutions for our customers. Based on our strong market positions and competitive strengths, we aim to further grow our market share and margin contribution.

Building on our strong market position
We are well positioned in the market and our work to improve quality and service allows us to serve our customers even better. In lithographic sheet, we continue to lift the competitive bar by enabling more performance for less process cost. This enables us to strengthen our leading position. In the can segment, we are high-grading our portfolio and shifting our focus to the more attractive European market. In Foil, we are prioritizing rolling operations and will therefore discontinue our activities in the conversion area by the end of 2019. Consequently, the future focus will be on liquid packaging and innovative plain foil applications. In the area of Special products, we are high-grading our product portfolio and strengthening our European position, supported by our local technical customer service teams and our strong research and development center.

Based on expected strong demand growth in the automotive body-in-white market segment, we invested in a new production line in Grevenbroich, Germany. Most of the issues leading to delays in the ramp-up of Automotive Line 3 (AL3) have been solved and progress has been made with product qualifications.

Ramp-up of the new Used Beverage Can (UBC) Recycling Line at our Neuss plant, Germany, is progressing. While equipment design issues affected production performance in 2018, the modifications we carried out at the end of 2017 and during 2018 have led to improved performance. Further modifications are expected to allow the line to reach targeted output speed of >40 000 mt/yr liquid aluminium by the end of 2019. The UBC line will support our target of being carbon neutral by 2020.

Strengthen our performance in Environment, Health and Safety
Our first priority is the health and safety of our employees. In 2018, we focused on reducing sick leave and on improving risk management, leadership development and employee engagement. We will continue our efforts to improve in these fields, supported by appropriate training.

Rolled Products is a key contributor to Hydro’s overall carbon-neutrality ambition: We aim to lead in sustainable solutions through our products and processes with an overall improved CO_2 footprint along the value chain, and we intend to deliver material certified according to the Aluminum Stewardship Initiative starting from 2019.

Aluminium has numerous advantages in terms of energy savings and reduced greenhouse gas emissions in the use phase. Our technical customer service department works closely with customers to develop innovative and cost-efficient solutions that take advantage of these qualities. Light-weight aluminium products used in the transportation industry help reduce fuel consumption and emissions, an example is our automotive body sheet. Similarly, the superior food preservation properties of aluminium packaging is benefiting the environment.

Aluminium remelting requires only 5 percent of the energy that is needed to produce primary aluminum. As a result, we aim at significantly increasing the volume of recycled material in our products through our advanced scrap processing and melting production processes. We are also focusing on optimizing our alloys to make aluminium the material of choice in all our markets.

Through the reduction of energy consumption at our Neuss aluminium plant and an energy-efficiency program for our rolling mills, we are reducing emissions and increasing resource efficiency. The targeted increase in volumes sold to the automotive market, as well as other flat-rolled products, will help us maximize ”use-phase benefits.” As one of several activities, our new UBC line contributes to increased recycling of post-consumer scrap.

Compared to Hydro's upstream operations, Rolled Products' environmental footprint is relatively small and mainly within the vicinity of our production sites. The main environmental impacts include CO_2 emissions, noise, odor and traffic volume.

Achieve targeted improvements
Our improvement ambition *Better* Rolled Products had been defined to generate annual revenue and cost improvements of NOK 900 million by 2019 compared to revenue and cost levels at the end of 2015. However, the delay in the ramp-up of the new automotive line and the UBC line, as well as performance issues in one of our plants, adversely affected our improvement ambition in 2018. Due to these reasons, we delayed by one year our *Better* ambition. We are now targeting NOK 900 million by 2020, while the revised 2019 target is NOK 700 million.

Ambitions going forward
We are committed to a safe working environment and to eliminating accidents in our operations. We aim to increase the returns of our business operations by concentrating on operational excellence, with focus on production reliability and quality to improve in productivity and cost. Our customer and market focus is a key success factor in high-grading the product portfolio to achieve higher margin contribution per hour on bottle-neck equipment. We intend to develop and improve our market share by leveraging our preferred supplier position in the market. With a focus on our strong position within lithography, foil, beverage can, automotive and special products, we will continue to emphasize the quality of our products and services to customers. We may pursue selective growth opportunities and will continue to concentrate on innovation and technology to sharpen our competitive edge. We are taking the responsibility to lead the transition toward a low-carbon society and we are preparing for future growing demand in aluminium recycling. Going forward, innovation is further enabled by our integration across the value chain, which represents a major asset for Hydro.

Mid-term strategic goals Rolled Products

	Ambitions	Medium-term target	Timeframe	2019 Target	2018 Target	2018 progress	Status
Better	Improve safety performance, strive for injury free environment	TRI[1] <2	2020	TRI < 3.0	TRI < 3.0	TRI 4.9	●
	Realize ongoing improvement efforts Better	BNOK 0.7	2019	BNOK 0.7	BNOK 0.5	BNOK 0.4	●
	Differentiate through product innovation, quality and service	min. 1 step change/yr	Annually	1 step change	1 step change	Advanced alloys for superplastic forming	●
Bigger	Increase nominal automotive Body-in-White capacity	200,000 mt/y	2017[2]	200,000 mt/yr	200,000 mt/yr	Ramping up, qualifications ongoing	●
	Complete ramp-up of UBC recycling line	>40,000 mt/yr	2017[2]	Ramp-up completed	Ramp-up completed	Delayed to Q4 2019	●
Greener	Lift post-consumer scrap recycling	>100,000 mt/yr	2020	85,000 mt/yr[3]	83,000 mt/yr	57,000 mt/yr	●

1) TRI, total recordable injuries per million hours worked, includes own employees and contractors
2) 2017 target not met; current target updated
3) Original target of 100,000 mt/yr will not be met by 2020

Green light: Ambition on track and on target; *Amber light*: Ambition behind plan, but on target; *Red light*: Ambition might not meet the medium-term target

The rolling process

The slabs are preheated before entering the hot reversing mill. The sheets are then rolled to the intermediate thickness in the finishing mill and cold rolled to the final product thickness.

Operations

The rolling process starts with “hot rolling” by heating up to 600 millimeter (mm) sheet ingots to about 500 degrees Celsius and gradually rolling these into thicknesses of 3-13 mm for further processing. Depending on the final product, these sheet ingots are produced with various alloy compositions. An alternative process, continuous casting, converts molten metal directly into coiled strip, typically 4-8 mm thick. Once cool, the thinner metal is further processed in cold rolling mills, producing various types of products for all markets supplied.

Cost and revenue drivers

Rolled products is a margin-driven business based on a conversion price where the LME cost element is passed on to the customer. Contracts are generally medium term. The cost structure includes a high proportion of fixed costs, so results are volume-sensitive.

Competitive strengths

- Leading positions in high-end products including automotive, foil and lithographic sheet
- Global reach with more than 20 percent export share for high-end markets, serving key customers in the Americas, Africa and the Middle East
- Leading R&D facility dedicated to Rolled Products
- World-class assets including Alunorf (50 percent), the world's largest rolling mill, and Grevenbroich, the world's largest multi-product finishing mill
- Alunorf, Grevenbroich, the Neuss aluminium plant and R&D Bonn are located in close proximity to each other in Germany, generating significant logistical advantages

Rolling mills
In 2018, we generated approximately 80 percent of our total sales in Europe. More than half of our production was produced in the Grevenbroich/Alunorf rolling system in Germany, one of the most modern and efficient rolling operations in the world. Grevenbroich is the center of our packaging, lithographic and automotive sheet operations. Our production network mainly comprises so-called "wall-to-wall" processing, including an integrated casthouse combined with both hot and cold rolling mills.

Around 30 percent of the metal used was sourced internally, based on arm's-length conditions related to LME and applicable premium prices. External supplies of liquid metal, sheet ingots, standard ingots as well as post-consumer and pre-consumer scrap from our customers accounted for around 70 percent of our total requirements in 2018.

Neuss aluminium plant
Neuss is the largest aluminium plant in Germany, with primary metal capacity of 235,000 mt per year, including one curtailed potline. The Neuss plant also has recycling capacity of 90,000 mt, including a recycling line for used beverage cans (UBC), which is currently in the ramp-up phase. The plant supplies the nearby Alunorf rolling mill with primary and recycling-based sheet ingots for processing and subsequent fabrication of rolled products in Grevenbroich.

The Neuss plant is an important part of our integrated system and provides significant operating synergies.

Markets, products and customers
Our ambition is to leverage our position as a preferred supplier by focusing on quality, product development and innovative solutions, together with excellent customer service and cost efficiency. To ensure a strong market orientation, our sales function is organized centrally along business lines. This is supported by sales offices in Europe, Brazil, the U.S. and Singapore, where we optimize market contact and sales potential.

Our rolled products business is organized in two business units. Each serves the different market segments in which we operate.

Business unit Global products
Lithography: Hydro is the leading global supplier of lithographic sheet for printing plates, a market characterized by stringent requirements for surface quality, metal characteristics and mechanical properties. We differentiate our products through innovation, consistent high quality, supply chain solutions and extensive service to customers. Key customers in this segment include Agfa, FujiFilm and Kodak. Our lithographic production is concentrated at the Grevenbroich plant.

Automotive: We are a major supplier of aluminium sheet and coil to the European automotive market for interior and exterior vehicle body parts, chassis and component applications. Key customers include Audi, BMW, Daimler, PSA and Jaguar Land Rover. Production is concentrated within our Grevenbroich and Hamburg plants. To increase our car body sheet capacity, we have invested in a new production line in Grevenbroich (automotive line 3), which is in the ramp-up phase.

Heat Exchanger: We produce a variety of mainly clad strip and sheet used in the manufacture of heat exchangers for passenger and commercial vehicles as well as other product applications. We are among the top producers in Europe, working with Tier One suppliers such as Mahle Behr, Denso, Modine and Linde to develop specially adapted alloys and optimized production techniques to fit their manufacturing processes.

Flat rolled products consumption Western Europe 2018

Total market 4.2 million mt

Source: CRU Quarterly November 2018

Flat rolled products consumption Global 2018

Total market 27.3 million mt

Source: CRU Quarterly November 2018

Foil: We serve customer needs in the rigid, semi-rigid and flexible packaging industry, offering plain foil and strip. We provide packaging solutions combining high-quality manufacturing with innovation, cost effectiveness and sound ecological characteristics. We also offer a range of services in terms of consulting and technical support. We are specialists in thin-gauge foil for flexible packaging, offering foil as thin as 5.0 µm for the packaging of food as well as for technical applications. Tetra Pak, Amcor Flexibles and Constantia Flexibles are key customers. Production of packaging is mainly concentrated in our Grevenbroich rolling mill.

Beverage can: Hydro is a worldwide supplier of body, end and tab stock in the form of rolled coil for the production of aluminium beverage cans. Our modern and efficient production facilities, technical know-how and experienced development support facilitate the delivery of high-quality materials to meet the specific requirements of can manufacturers. Our Grevenbroich plant is dedicated to the production of Hydro's quality proprietary can-end stock efficiEND®, which promotes productivity and cost-effective

manufacturing to major beverage can manufacturers such as Ardagh, Ball and Crown.

Business unit Special products
General Engineering: General Engineering products are mainly used in the building and construction, transportation, industrial and electrical markets. Products include coil and sheet for wholesalers and end-producers. We operate modern and efficient manufacturing processes, offering quality products and extensive technical support.

Building (coated): Hydro is one of the leading manufacturers of coated aluminium strip, with experience in the building market for many decades. We offer to our customers a portfolio of cost-effective solutions from the dedicated production lines in our Holmestrand rolling mill, including product applications for roofing and cladding, roller shutters, ceilings, composites and other specific applications.

Technology and innovation
We differentiate our business through innovative products, processes and services that save resources, reduce emissions and increase performance. Customers benefit from this added value, which increases our market share and margin contribution. We cooperate with customers to develop innovative solutions, through R&D and our sophisticated technical customer service. Our world-leading, in-house simulation team utilizes the latest computer aided process design and alloy development tools. The sophisticated modeling not only delivers optimum results, but also provides all the necessary information for efficient application by our customers.

Supported by our advanced scrap processing and melting concepts, we intend to increase the volume of recycled material used in our production processes. We also focus on optimizing our alloys to make aluminium the material of choice in all our markets.

In many markets, automotive in particular, product design complexity and demands on new high-strength materials are increasing. We recently launched three new aluminium alloys specifically for hot-metal forming of aluminium sheet. Applications are seen mainly in the area of thin-walled complex automotive components. Unique property combinations like higher elongation, better formability and higher post-forming strength are allowing us to form larger parts in one piece and are surpassing currently available alternatives in the market.

In 2018, Hydro and fka (Forschungsgesellschaft Kraftfahrwesen mbH in Aachen, Germany) developed a new concept for a fully electric L7e micro-car class. The study shows how aluminium can enable cars to achieve the L7e classification and still reach the safety levels typically provided by larger cars. In this advanced study, Hydro participated with engineering expertise from three of its business areas: Extruded Solutions, Primary Metal and Rolled Products.

Our R&D center continues to develop solutions for the recycling of automotive scrap. Further process development has been done following installation of the LIBS (Laser-induced breakdown spectroscopy) based pilot scale sorting line at our R&D center. We see clear opportunities for this technology to enhance Hydro's and aluminium's competitiveness and enable further growth in automotive.

Digitalization / Industry 4.0
Digital transformation of the business is an important element for future value generation. New technologies open opportunities to digitize along the whole value chain, capitalizing on fast and continuous access to reliable and accurate data. We aim for benefits in production e.g. by stabilized material flow, increased through-put and improved safety performance as well as for benefits in administrative functions and interfaces to customers and suppliers.

Rolled Products has developed a roadmap for digitalization focusing on Big Data, Machine Learning, Track & Trace as well as Digital Worker. Several projects are on the way and are being followed up.

Environment
Aluminium has numerous advantages in terms of energy savings and reduced greenhouse gas emissions in the use phase of the overall life cycle. Our technical customer service department works closely with our customers to develop innovative and cost efficient solutions to take advantage of these qualities.

Light-weight aluminium products used in the transportation industry reduce fuel consumption and emissions. Our production of automotive body sheet is one example of how we contribute to reducing CO_2 emissions while continuing to grow our business.

Another example is the superior food preservation properties of aluminium packaging. Food packaging utilizing aluminium requires less energy to cool and also reduces food waste.

As remelting only requires 5 percent of the energy used for the production of primary aluminum, we aim at significantly increasing the volume of recycled material in our products through our advanced scrap processing and melting production processes. We are also focusing on optimizing our alloys to make aluminium the material of choice in all our markets. For example, our automotive products HA6016-X and AA5182 offer higher formability and corrosion resistance, to make cars lighter, safer and more dynamic.

Compared to Hydro's upstream operations, Rolled Products' environmental footprint is relatively small and mainly within the vicinity of our production sites. The main environmental impacts include CO_2 emissions, noise, odor and traffic volume. We follow European policies such as the Water Framework Directive. Rolled Products' sites conduct a self-assessment exercise designed to identify and lower the risks associated with our water usage and consumption

People
Rolled Products had 4,018 permanent and 413 temporary employees in its consolidated activities at the end of 2018.

The Renew initiative started in 2015 and aims at increased involvement, trust and cooperation of all employees as part of our improvement ambitions. In 2018, we focused on rolling out a leadership program for the lower management levels to support us in creating Renew-type leadership in all units. Furthermore, HR development programs for leaders and employees were reviewed to support the Renew initiative.

My Way, our internal performance and feedback process, is an important tool to engage our people and enhance the performance and development of our organization. My Way is implemented in all Rolled Products units with a participation rate of close to 100 percent. The qualitative feedback given by our employees assessed My Way as helpful for their personal development.

Our employee survey Hydro Monitor was conducted again in 2018 to measure the engagement of our employees, and we achieved an Employee Engagement Index that puts Rolled Products in the top 10 percent in our industry, maintaining the level in the last survey in 2016.

We recognize diversity as a key value and performance driver. This is reflected in our internal improvement activities and in our employer branding. The business area's management team has five nationalities and a female share of 36 percent.

Society
As a significant employer in the areas where we have production sites, Rolled Products and our employees play an active role in the development of the surrounding communities by supporting local programs aimed at education and community involvement.

With respect to our supply chain, the area of corporate social responsibility (CSR) forms an integral part of our procurement process. All of our suppliers are required to undergo a comprehensive selection process, including risk assessments and on-site audits, to ensure our continued compliance with local regulations and Hydro's own internal requirements.

Plant	Country	Capacity (000 mt)	Main products	Other characteristics
Grevenbroich	Germany	570	Packaging, lithographic sheet, automotive	· The world's largest multi-product finishing mill · Supplied by nearby AluNorf rolling mill
Alunorf 50%	Germany	800	Packaging, automotive, general engineering	· The world's largest rolling mill · 50/50 joint venture with Novelis · Partly supplied with sheet ingot from nearby Rheinwerk smelter · Integrated cast house, based on remelting and recycling
Hamburg	Germany	165	General engineering, automotive, heat exchanger	· Integrated casthouse and recycling
Karmøy	Norway	90	General engineering	· Continuous casting
Holmestrand	Norway	90	Building, general engineering	· Integrated casthouse, recycling center
Neuss	Germany	235 primary	Liquid metal and sheet ingots 40 (UBC)	· Integrated casthouse and recycling · One potline curtailed · UBC recycling center
Dormagen	Germany	45	Automotive	· Slitting

Business unit	Shipments in %	Key characteristics
Global products	69	· Largest producer in the lithographic sheet market · Serving OEMs and their suppliers with strip and sheet for automotive body, component and chassis applications · Automotive and non-automotive heat-transfer applications · Beverage can and foil with leading position in the high value-added liquid packaging market
Special products	31	· General engineering products mainly used in industrial applications · Coated building products

Extruded Solutions

Industry Overview
The global extrusion industry is characterized by fragmentation, with numerous local suppliers. Extruded Solutions is the global market leader and largest player in the industry. However, competition is fierce, with local suppliers that are well established in their respective markets.

Extrusion aluminium consumption* by end use 2018

Total market 30.4 million mt

*Consist of semi fabricated products (included recycled aluminium)

Source CRU 2018 /Hydro

Extrusion aluminium consumption* by region 2018

Total market 30.4 million mt

*Consist of semi fabricated products (included recycled aluminium)

Source CRU 2018 /Hydro

North America, Brazil and Argentina
North American demand for extruded products increased by approximately 4 percent in 2018, driven by growth in the transportation segment and higher activity in the building and construction market. The increased demand has been driven by a strong transportation sector, with heavy-duty truck and trailer build rates growing as a result of robust freight demand and economic activity. Despite flat build rates and soft car sales in the light vehicle segment, the demand for extrusions has increased, supported by material substitution trends. The demand in the building and construction market has been positive, supported by strong housing starts in the residential segment and an improved outlook in the commercial sector. In North America, although a large part of the business is local, the structure of certain markets, such as transportation, automotive, and rolling stock, is more often regional or even global. Beyond Extruded Solutions and its competitors such as Kaiser Aluminum, NMLP Aluminum Group, and Bonnell Aluminum, the majority of extrusion operations in North America are local, independently owned companies.

In South America, the economic development in Brazil and Argentina, the region's two largest economies, has been challenging. Despite various growth projections and reforms, South American development experienced a slower recovery in 2018 than expected.

Europe
Proximity is usually very important to European customers. Some European competitors that previously served local markets such as Cortizo, Exlabesa, and Hammerer Aluminium Industries, have expanded their footprint into other countries. There are more than 250 extruders with more than 730 presses in Europe. Despite overcapacity in Europe, we are seeing new extruders entering selected markets. The European demand for extruded products is expected to have increased by 2.4 percent in 2018. The building and construction market continued its recovery, while the transportation sector had mixed developments across its sub-segments. The automotive market experienced a slowdown towards the end of 2018, driven by a backlog in the certification of vehicles' carbon dioxide emissions, as part of the Worldwide Harmonized Light Vehicles Test Procedure (WLTP). Despite the slowdown in automotive, extruders continued to benefit from material substitution trends, while the production of cars in Europe remained at high levels in 2018.

The building and construction industry is the largest consumer of aluminium extrusions in Europe and the market remains highly fragmented. The market for building systems is largely local or regional and is experiencing consolidation. With the harmonization of building regulations across the EU, vendors are creating systems that are not limited by national borders and are coordinating development, production, purchasing, logistics, and marketing. Our Building Systems business unit is taking the same approach. Competitors include Schüco, Corialis, Ponzio, Kawneer, Reynaers, Heroal and Hueck.

Asia
After two decades of strong investment-driven GDP growth, the Chinese economy is entering an era of slower consumption-driven growth. The large government stimulus packages put in place after 2008 helped stimulate demand and led to a significant capacity increase in the extrusion industry. With somewhat lower growth rates, especially in the building and construction segment, more extruders are expected to move to the higher-end industrial and automotive segments.

Within the automotive sector, despite the recent slowdown, the Greater China market continues its growth and maturity within lightweight vehicle production. In addition, the Chinese government is heavily facilitating and promoting new energy vehicle (NEV) infrastructure and technology, creating opportunities for new applications in the aluminium tubing business.

Precision Tubing
Precision Tubing is a global industry, represented in several regions. Consumption of extruded aluminium round tubes, multiport extrusions, and welded aluminium tubes is driven by thermal management applications in the automotive market. With electric mobility gradually becoming the go-to technology, additional applications in battery cooling have emerged as potential tubing segments. Another industry that

is recognizing the benefits of aluminium is Heating, Ventilation, Air Conditioning, and Refrigeration (HVAC&R). In light of stricter legislation and tougher standards for energy efficiency and especially refrigerants, coupled with the hike in copper prices in 2017, aluminium represents a viable alternative solution.

Aluminium consumption in the automotive industry is expected to grow, driven largely by the increase in worldwide production of light vehicles, electric and hybrid cars, and higher penetration of air conditioning in emerging markets. In parallel, the HVAC&R market still represents considerable potential in substituting copper with aluminium at current production volumes. Precision Tubing is the clear market leader in providing aluminium solutions for heat transfer applications. The main competitors include Erbslöh Aluminium, Impol and StandardMetallwerke in Europe, and Brazeway, Peerless and Penn Aluminum in the U.S. Competitors in Asia include UACJ, Wanhe, Mitsubishi, Vikas Altech, OKB, Yatal and CA Auto. Main competitors to Extruded Solutions are also found in the copper segment, including Golden Dragon in Asia and the U.S., and Mueller Industries in Europe.

Strategy and targets

Extruded Solutions is a global leader in the extrusion industry, operating in more than 40 countries. One of its strengths is the ability to adapt our business model to the needs of the local customers, gaining competence and capabilities. Most competitors are small-to-medium-sized regional extruders.

Over the past few years, Extruded Solutions built a strong foundation based on a continuous focus on safety, quality and people. With a business strategy focused on increasing value-added service to the customers, simplifying the organization, and lifting margins through selective growth, Extruded Solutions has achieved a strong track record of improvements.

The world is changing, and Extruded Solutions sees many opportunities to provide the best aluminium solutions through the right strategies and tactics in this changing landscape.

Rapid population growth and urbanization are driving the need for new technologies and sustainable solutions in transportation, construction and industrial applications. This is resulting in a shift in the automotive market towards lightweighting and electrification, and toward energy-efficient and recycled solutions in the building and industrial markets.

Extruded Solutions' strategy is about value over volume, driven by innovation, collaboration and simplification. Better, Bigger, Greener aspirations and strategic priorities have been well aligned within Extruded Solutions and created a foundation for Hydro's new values: Care, Courage and Collaboration. Extruded Solutions is a multi-local company, with competitive advantages that differentiate it from the competition. Our main strengths are:

- *Unmatched technology competence.* The ability to utilize our strong technical competence, R&D and engineering capabilities, supporting customers in application and product development, covering all steps from design to manufacturing
- *Value chain width and depth.* The ability to provide one-stop-shop solutions with capabilities ranging from standard extrusions to finished products through surface treatment, fabrication and other value-adding services
- *Global reach and local presence* The ability to utilize the power of global networks to support the customers, while providing uninterrupted service through our local organizations

Despite geopolitical turbulence across many continents, the extrusion outlook remains positive. Demand is solid in the major regions where we operate. In Europe and North America, there is a strong demand for extrusions in the automotive segment, driven by lightweighting and material substitution. In addition, the electric mobility sub-segment is developing rapidly, driven by regulations and increasing infrastructure developments. Extruded Solutions is actively engaged with the major players in the automotive industry, delivering important components for battery enclosures, body structures and other parts of electric vehicles.

Building and construction remains the largest market in the portfolio of Extruded Solutions, representing close to 40 percent of total sales. Material substitution in the industrial segment, such as furniture, machinery and industrial equipment, also represents opportunities over the next few years.

Strategic targets

Extruded Solutions will continue to build on the value-over-volume strategy going forward, based on the three strategic pillars:

- Simplify and collaborate
- Deliver value-added solutions and services to our customers
- Grow to lift margins and profitability

The overall goal is to deliver profitable growth and results above the cost of capital in all areas of operation. Extruded Solutions is committed to remain an environmentally conscious, ethical, compliant and equal opportunity employer, and will aim at delivering average underlying EBIT growth of minimum 10 percent over the next three years.

The roadmap to achieve the targets is based on multiple elements:

- Increased net added value (NAV)
- Selective growth in profitable market segments
- Portfolio mix management
- Investments in extrusion and remelt capacity
- Continuous asset reliability focus

In 2018, two Brazilian extrusion plants were acquired from Arconic, which strengthened Extruded Solutions' position in Brazil and created a solid platform for future growth. The integration of these plants is on track and continuous EBIT improvements are expected in 2019. In addition, the Building Systems unit within Extruded Solutions expanded its competence in hardware, fittings and accessories products with the acquisition of the German company Eugen Notter GmbH in 2018. This investment strengthened the in-house capabilities of Building Systems and will expand its product portfolio with innovative solutions.

Another large strategic investment in 2018 in Extruded Solutions was breaking ground for the construction of a new high-performance extrusion press at the Cressona plant in Pennsylvania in the U.S. The new press will have state-of-the-art capabilities primarily targeted at meeting the needs of the growing automotive market in North America. The amount of aluminium content per vehicle in the U.S. automotive industry is projected to increase as OEMs are demanding stronger, light-weight applications that help improve fuel economy and payload. The new press in Cressona will be able to produce new higher strength alloys for applications that need additional value-added fabrication and will provide Extruded Solutions in North America with a solid platform for future business development. The plant has sound financial performance, an established automotive culture, and vast technical resources to successfully deliver on this expansion project and capture new business opportunities in North America.

Our strategy is about "value over volume" driven by innovation, collaboration and simplification

Better

Raise performance and improve customer offering

- Employer of choice with world-class safety, quality, people development and compliance
- Higher value creation through innovation and collaboration
- Strong profitability and value through commercial, service, and operational excellence

Bigger

Expand the use of aluminium and strengthen Hydro's platform for growth

- Develop leading positions in select profitable markets
- Expand value-added capabilities to strengthen our offerings to customers
- Drive material substitution to aluminium in new and existing applications

Greener

Lead the transition towards sustainable solutions

- Promote recyclability and aluminium applications for a low carbon, circular economy
- Increase recycling footprint
- Reduce emissions and waste throughout our value chain
- Support communities through CSR initiatives

Operations

Extruded Solutions is the leading global supplier of extrusion-based aluminium solutions with a market share of 20 percent in Europe and 23 percent in North America. The business area also has a solid foothold in emerging markets with extrusion capacity in South America and Asia. Extruded Solutions has four business units: Extrusion Europe, Extrusion North America, Precision Tubing and Building Systems. The business units are responsible for their respective value chains, from casthouses, aluminium extrusion and value-adding operations to commercial activities such as product development and sales.

Extruded Solutions has an extensive network of production plants that ensures global reach combined with local presence. During 2018, Extruded Solutions focused on simplification, and adding more value and locating resources closer to customers.

Cost and revenue drivers

Extruded Solutions is a margin business and the LME aluminium cost element is passed on to the customer. Contracts are typically short to medium term. Extruded Solutions will continue to shift its portfolio toward higher-margin products.

Competitive strengths

- Strong technology competence with dedicated R&D centers and more than 1,000 engineers close to customers
- Global reach and local presence, increasing flexibility and reliability for customers
- Speed in delivery and proximity to customers
- Value chain breadth and depth, from extrusion to surface finishing and fabrication, welding and assembly
- Strong and agile product development capabilities
- Technical leadership in precision tubing and extrusion

Technology and innovation

Extruded Solutions' innovation model promotes fast decision paths from idea to product. The business area has four R&D centers, located in Finspång (Sweden), Troy (USA), Karmøy (Norway) and Toulouse (France). These are complemented by application centers covering nearly 40 locations across the four business units and by corrosion labs in China, the U.S. and Norway.

All efforts are shared across business units to achieve optimal knowledge transfer and to enable faster, better impact in other markets where similar opportunities arise.

To deliver better products to the customers faster, and to address specific challenges, Extruded Solutions collaborates with leading universities such as the Norwegian University of Science & Technology, Michigan Technological University, Massachusetts Institute of Technology and the University of Oxford, as well as with specialized companies.

Building Systems has opened physical showrooms in selected cities in Europe to promote their latest product developments. Product innovation is vital to success in that market, mainly in Europe, where end-users are becoming advanced.

In Precision Tubing, the innovation is focused on developing new aluminium applications for the automotive industry, such as fuel and brake lines. Aluminium substitutes copper and steel, resulting in comparable performance, but lighter

products. R&D in Precision Tubing is also focused on developing new alloys to achieve higher corrosion resistance in heat exchange applications.

Environment
While primary aluminium production is energy- and climate-intensive, it can save significant amounts of energy and greenhouse gas emissions in the use phase. The inherent properties of aluminium make recycling attractive. It can be recycled infinitely without degradation in quality, and recycling requires 95 percent less energy than primary aluminium production.

Environmental considerations are embedded in Extruded Solutions' business planning and decision-making. Design for recycling and optimizing the products for longer life is an important part of our environmental efforts.

In September 2018, Extruded Solutions signed an agreement with Primary Metal to source and use Hydro 75R in its aluminium building systems. 75R has Hydro's lowest environmental footprint with minimum 75 percent post-consumer recycled aluminium – metal that has been used in other products, which brings the CO_2 footprint to a low level, below alternative materials. The customers of Extruded Solutions are looking for more sustainable materials for their products and Hydro 75R is a certified product that helps them meet their own climate strategies.

The extrusion site in Hoogezand, Netherlands, was awarded an Aluminium Stewardship Initiative (ASI) Performance Standard certificate in 2018 as the first extrusion plant in the industry. Ten additional Extruded Solutions sites are planned for certification in 2019.

By the end of 2018, about 99 percent of all Extruded Solutions sites had fulfilled the target of being certified under ISO 14001.

All sites are required to set targets for:
- Reducing CO_2 and greenhouse gas emissions
- Avoiding emission of pollutants to ambient air to the extent possible. The emitted amount of pollutants must not exceed limits specified in permits or in regulatory requirements
- Minimizing fresh water usage and waste water discharges, ensuring that discharged water quality is in line with local regulations and does not exceed the established limits
- Eliminating or minimizing waste and prioritizing waste recycling. At locations where recycling opportunities exist, the target is to completely eliminate waste to landfill
- Conducting and documenting an energy-planning process, leading to activities that continually improve energy performance
- Preventing leaks, spills and releases from tanks and chemical storage areas to protect surface and ground waters

Extruded Solutions had no major environmental incidents in 2018, but had an increase in environment noise complaints. This is a key focus area for 2019. For more information, see note E2 to the Viability performance statements.

People
Extruded Solutions employs approximately 22,200 people in more than 40 countries. The business area strives for a safe work environment and believes that excellence in Health, Safety and Environment (HSE) will be achieved through consistent implementation of the management system, and through committed and visible leadership and full engagement of all employees in HSE activities. In 2018, Extruded Solutions' safety performance deteriorated, and the Business area experienced one fatal accident. The total recordable injury rate (TRI) including contractors was 3.8 for 2018. TRI for own employees was unchanged at 3.6 compared to 2017[10]. The number of sites without recordable injuries increased from 62 in 2017 to 65 last year, which constitutes about half the sites in Extruded Solutions.

During 2018, Extruded Solutions further developed its approach to physical health, mental health and well-being. A new method to occupation exposure assessments has been developed and a focused strategy on work-related stress was initiated.

Extruded Solutions strives to offer an encouraging and stimulating environment, interesting career opportunities, and good working conditions to attract talented people. There are several ongoing global people processes which aim at reaching these ambitions.

Employee engagement impacts everything from injury rates to innovation. Prior to its acquisition by Hydro in 2017, Extruded Solutions had run its company-wide employee engagement survey Sapa Engaged!, which was designed to measure employee well-being. The survey was last conducted in 2017.

The survey targeted all employees and 19,518 people responded. The results indicated improvements related to scores for the closest manager of employees. This is assumed to be a direct result of Extruded Solutions' work to build basic behavioral leadership at all levels of the organization, including middle managers. The next survey is planned for 2019, when Extruded Solutions will be included in the Hydro Monitor survey that targets all Hydro employees.

Society
In Tønder, Denmark, Hydro is working closely with integration and settlement coordinators from the local municipality. This cooperation creates opportunities for work and housing for newcomers and refugees in Tønder. The refugees work at the plant, which gives them an opportunity to develop a network and learn the culture and language. For Hydro, these new employees bring essential competence, different backgrounds and perspectives, which is important for the company culture.

In Kuppam, India, Hydro is financing two learning labs, which give children at schools in the village access to enhanced learning opportunities. These innovative learning

[10] 2017 figures included employees only

labs combine digital learning platforms and hands-on games, which let the children learn at their own pace and level. This initiative has enabled the children to improve in several areas, the most important one being their English skills. A proficient level of English is fundamental to be admitted in higher standard schools, which can potentially have life-changing effects for some of these young students.

4 QUALITY EDUCATION

8 DECENT WORK AND ECONOMIC GROWTH

Corporate social responsibility is an important foundation for procurement and sourcing in Extruded Solutions. Hydro has worked to promote transparency and sustainability in the supply chain by implementing its supplier declaration and conducting on-site audits of suppliers. Hydro has focused on the largest suppliers in high-risk regions. About 60 percent of total spending is directed toward a relatively small share of the 30,000 suppliers.

The extrusion process

The ingots are preheated, extruded through a die and hardened before surface treatment.

Energy

Industry overview
Electricity generation in the Nordic market is mainly based on hydropower (54 percent) and nuclear power (22 percent). Generation in Norway is almost entirely based on hydropower. Total annual Nordic consumption is approximately 400 TWh.

There has been a common Nordic electricity market since the late 1990s. Since 2010, the physical power exchange, Nord Pool, has operated a common Nordic-Baltic electricity market. The Nordic system price is calculated in the day-ahead auction in the spot market at Nord Pool. The system price is normally the main reference price for financial contracts traded bilaterally and with the financial power exchange Nasdaq. Area prices are calculated for physical delivery to constrain flows when available transmission capacity would otherwise be exceeded. There are five price areas in Norway, four in Sweden and two in Denmark. Finland, Estonia, Lithuania and Latvia constitute one bidding area each.

Prices are influenced by fuel costs (including emission allowance costs), meteorological parameters (precipitation, temperature and wind) and exchange transmission possibilities with adjoining markets, as well as by fluctuations in demand. An increase in intermittent generation from solar and wind power capacity has had a significant effect on price volatility in Europe's continental markets and influenced price developments in the Nordic market.

The implementation of EU energy and climate regulations has and will continue to have a significant influence on energy prices and energy and climate policy in all EU/EEA countries. Emissions trading has increased electricity prices by up to 50 percent in periods with high emission-allowance costs in Europe, including the Nordic market, where electricity is predominantly generated by non-emitting sources. There is, however, an ongoing EU legislative process aimed at reducing emissions and consequently increasing future allowance prices. In order to prevent carbon leakage, the EU established guidelines in 2012 allowing national governments to support industries exposed to global competition. Actual compensation schemes, which are dependent on national implementation, have been established in Norway, Germany and Slovakia, with conditions corresponding closely to the EU guidelines. Please see section Regulation and taxation - Aluminium regulation - climate gases later in this report for more information on the matter.

A common electricity certificate market for Norway and Sweden was established in 2012 with the objective to support the development of new renewable generation capacity. The certificate system is designed to support an increase in annual renewable generation in the Norwegian/Swedish market of 28.4 TWh by 2021. The Swedish government has decided to prolong the scheme with a new national target between 2020 and 2030.

Strategy and targets
Hydro is one of the largest power plant operators in Norway, with more than 100 years of experience in hydropower production. We intend to develop the value of our Norwegian assets and to use our extensive energy competence to secure competitive energy for our global activities. Operational excellence and ongoing improvements continue to be a key priority to secure cost effective, safe and reliable production.

Maintain and develop our captive power capacity
Our ambition is to continually increase Hydro's share of captive power from renewable sources, and to further explore opportunities within our existing concession areas in Norway. Securing and increasing the value of our energy assets is a key priority, based on our normal equity power production of 10 TWh.

Hydro is well positioned to capitalize on structural changes in the European power sector. The Electrification of transportation and the energy storage business are undergoing major changes that affect the energy sector. Through our ownership in Corvus, Hydro is gaining insight into the battery industry. On the sourcing and consumption side, flexibility will help us ensure balance in a power system relying more and more on volatile production from solar and wind. Sourcing and management of wind power, alongside investments in the development of renewable energy, ensures knowledge and insight into the fast-growing industry.

The Norwegian Parliament amended the Waterfall concession act in June 2016. The amendment implies that private entities are allowed physical hydropower offtake for ownership stakes below 33.4 percent in hydropower companies (ANS/DA model). This enables Hydro to maintain access to physical power from our assets, subject to reversion through restructuring the assets within a one-third ownership position in a company with liability. See Government regulation - Energy regulation and taxation for further information on this matter. The change was an important step toward securing robust industrial ownership for our Røldal-Suldal (RSK) assets. In 2018, the process continued by further maturing options for RSK.

Optimize power asset management and operational excellence
We are continuously developing our expertise in optimizing power production and market operations. Our objective is to minimize the cost of industrial sourcing and maximize the value of our production assets, including active participation in power markets. We have made significant cost and safety improvements in our hydropower plants during the last decade, and we will continue to pursue further performance improvements. Safe, reliable, environmentally conscious operations remain among our top priorities.

Sourcing competitive energy for our global operations
Access to competitive energy is a major success factor in our value chain. We have significant energy exposure on nearly every continent. We are engaged in a number of initiatives to identify and secure competitive energy supplies for Hydro's operations. In 2018, we entered into four contracts for long-term power sourcing. The total energy contracted in 2018 for the years 2021 to 2030 is 2.2 TWh annually, and these contracts will help strengthen Hydro's renewable power base in Norway.

Norsk Hydro Energia Ltda completed its fourth year of operation in 2018 as a vehicle for power market operations in

Brazil. We are actively involved in promoting a responsible energy policy in the regions where we operate.

In 2018, Hydro acquired 34 percent of the shares in Njordr AS, a Norwegian company developing wind power projects. Njordr employs key resources with long-term experience within the industry. As an aluminium producer, we are using significant amounts of energy, and as part of our ambition to be carbon neutral, it is therefore important to participate in the rapid development of renewable energy sources.

Mid-term strategic goals Energy

	Ambitions	Medium-term target	Timeframe	2019 Target	2018 Target	2018 progress	Status
Better	Improve safety performance, strive for injury free environment	TRI[1] <2	2020	TRI 0	TRI < 2	TRI 0	●
	Secure new competitive sourcing contracts in Norway post 2020	4-6 TWh	2020		0.5 - 1 TWh	4.8 TWh[2], completed	●
	Support competitive energy supply as well as energy policy and framework development for other business areas	Progress	Continuous	Continuous	Continuous progress	Continuous progress	●
Bigger	Robust industrial ownership for RSK - maintain physical power offtake post 2022	3.0 TWh	2022	Mature options	Mature options	Maturing options	●
Greener	Deliver additional production volumes through upgrades/sustaining investments	~0.1 TWh	2020	Continuous progress	Continuous progress	80 percent	●

1) TRI, total recordable injuries per million hours worked, includes own employees and contractors
2) 2.2 TWh power sourcing in 2018

Green light: Ambition on track and on target; *Amber light*: Ambition behind plan, but on target; *Red light*: Ambition might not meet the medium-term target

Operations
Hydro is a global energy player, purchasing and consuming substantial quantities of energy for its primary aluminium plants, rolling mills and alumina refinery operations. In Norway, we are the largest private-owned power producer with operating and ownership interests in 26 hydroelectric power plants. Installed capacity was approximately 2,000 MW in total at the end of 2018, representing normal annual production of 10 TWh.[11] We also purchase above 9 TWh annually in the Nordic Market under long-term contracts, mainly from the Norwegian state-owned company Statkraft.

Cost and revenue drivers
Production volumes and market prices are strongly influenced by hydrological conditions. Seasonal factors affect both supply and demand. Our cost base is relatively stable, although volatile spot volumes and prices may cause significant variations in quarterly revenues. We optimize our total power portfolio in the market and in cooperation with our aluminium plants.

Competitive strengths
- Power coverage until 2030 with new contracts
- Substantial captive power through equity hydropower in Norway
- High share of renewable energy
- Low operating costs
- Operational and commercial competence
- Stable earnings and cash generation

[11] Annual hydropower production can vary by as much as 20 percent in either direction, depending on variations in hydrological conditions.

Norwegian power assets
Our power plants are located in three main areas - Telemark, Sogn and Røldal-Suldal - and managed from a common operations center at Rjukan in Telemark. We also own the Vigeland power plant in Vennesla, and a 33 percent interest in Skafså Kraftverk ANS in Telemark.

Approximately two-thirds of our normal annual power production in Norway is subject to reversion to the Norwegian state with Røldal-Suldal (RSK) being the first

significant production facility subject to reversion. See sections "Strategy and targets" and "Energy - regulation and taxation" for further information on this matter.

In addition to sourcing power for our aluminium operations, Hydro sells about 1 TWh of the electricity related to its concession power obligations to the local communities where the power plants are located.

We optimize power production on a daily basis, according to the market outlook and the hydrological situation within Hydro's water reservoirs. By utilizing the flexibility of the hydropower plant systems and the volatility in the spot market price, Hydro aims to realize a premium above the average spot price. Our total Norwegian power portfolio, including our own production, is balanced in the market on the Nord Pool Spot power exchange. Spot market sales vary significantly between dry and wet years, with an average of 4.0 TWh.

Environment
Hydroelectric power is a renewable energy source. However, there are several potential environmental impacts associated with Hydro's operations, including changes in aquatic and terrestrial habitats along the waterways and impact on recreation and tourism. All of our reservoirs are located within or in close proximity to national parks and other protected areas in mountainous regions in southern Norway, including Hardangervidda and Jotunheimen.

We limit vehicle traffic related to operations and maintenance of reservoirs that are within protected areas, and snowplowing to protect reindeer habitat. We monitor the impact of our operations on aquatic life in rivers connected to catchment areas. In order to mitigate the effects of water regulation on fish populations, we launch around 86,000 fish spawn each year in almost 40 lakes and rivers as part of concession requirements. Rehabilitation projects are also carried out to improve fish habitats and esthetic qualities. Stone refuse tips from tunnel construction are registered and rehabilitation performed or planned, except for those that are protected as cultural heritage.

People
Energy had 193 permanent employees and 22 temporary employees, including apprentices, in its consolidated activities at the end of 2018. We emphasize a safe work environment and believe that we can promote this while also delivering on efficiency and low operating costs. We monitor and drive safety improvements through systematic, preventive activities focused on controlling risks and promoting an HSE culture.

Our workforce is our most important asset. My Way, our internal performance and development processes, and Hydro Monitor, our employee engagement survey, are important tools to engage our people and strengthen organizational performance and development. In 2018, nearly 100 percent of our employees participated in an appraisal dialogue through My Way. The Hydro Monitor survey is performed every second year, most recently in 2018. Energy’s results are on a consistently high level.

Society
Energy's operations are all located in Norway and have limited impact on the communities in which we operate. For safety purposes, Hydro restricts public access to certain areas due to varying water levels.

Our supplier requirements regarding corporate responsibility form an integral part of our procurement process, including selecting contractors for project execution.

(Ownership percent)	Rated capacity (MW) (100%)	Normal annual production (TWh) (Hydro share)	Key characteristics / concession period
Sogn (100 %)			
Tyin	374		· Total catchment area 803 km2 · Concession expiration Tyin 2051 and Fortun 2057
Mannsberg	3		
Holsbru	48		
Skagen	252		
Fivlemyr	2		
Herva	35		
Total Sogn		**3.2**	
Røldal-Suldal Kraft (95.2%)			
Middyr	2		· Total catchment area 793 km2 · Concession expiration 2022
Midtlæger	3		
Svandalsflona	20		
Novle	48		
Røldal	172		
Suldal I	169		
Suldal II	155		
Vasstøl	5		
Kvanndal	45		
Total Røldal-Suldal Kraft		**3.0**	
Telemark (100%)[1)]			
Frøystul	45		· Total catchment area 4 094 km2 · No reversion except for Frøystul 50% 2044, Moflåt and Mæl 2049
Vemork	204		
Såheim	188		
Moflåt	32		
Mæl	38		
Svelgfoss	96		
Total Telemark		**3.5**	
Skafså (33%)			
Åmdal	21		· No reversion
Osen	15		
Skree	7		
Gausbu	7		
Total Skafså		**0.1**	
Vigeland (100%)			
Vigelandsfoss	26	**0.2**	· Exempted from reversion
Total		**10.0**	

1) All plants in Telemark are wholly owned except for Svelgfoss, in which Hydro owns 70.22 percent.

Regulation and taxation

Hydro is subject to a broad range of laws and regulations in the jurisdictions in which we operate. These laws and regulations impose stringent standards and requirements and potential liabilities regarding accidents and injuries, the construction and operation of our plants and facilities, air and water pollutant emissions, the storage, treatment and discharge of waste waters, the use and handling of hazardous or toxic materials, waste disposal practices, and the remediation of environmental contamination, among other things. We believe we are in material compliance with currently applicable laws and regulations.

Aluminium - regulation

Environment
Hydro's aluminium operations are subject to a broad range of environmental laws and regulations in each of the jurisdictions in which they operate. These laws and regulations, as interpreted by relevant agencies and courts, impose increasingly stringent environmental protection standards regarding, among other things, air emissions, the storage, treatment and discharge of waste water, the use and handling of hazardous or toxic materials, waste disposal practices, and the remediation of environmental contamination. The costs of complying with these laws and regulations, including participation in assessments and remediation of sites, could be significant.

Primary aluminium production is an energy-intensive process that has the potential to produce significant environmental emissions, especially air emissions. Carbon dioxide and perfluorocarbons (PFCs), all greenhouse gases, are emitted during primary aluminium production.

In the European Union and other jurisdictions where Hydro operates, various protocols address transboundary pollution controls, including the reduction in emissions from industrial sources of various toxic substances such as polyaromatic hydrocarbons, and the control of pollutants that lead to acidification.

The European Union has adopted a number of pieces of legislation to address discharges of dangerous substances to water: The Water Framework Directive (2000/60/EC), as well as specific legislation on bathing waters, drinking water, nitrates in ground and surface waters, and urban wastewater treatment. The European Union has also adopted Directive 2008/105/EC on environmental quality standards in the field of water policy, which sets specific emission limit values for pollutants identified as priority substances and priority hazardous substances (PHS). Among the substances found on the PHS list are polycyclic aromatic hydrocarbons, which are sometimes emitted by the aluminium industry. Any emissions, discharges and losses of such substances (i.e. PHS) must cease in the EU by 2025. Both the Water Framework Directive and the Directive on environmental quality standards were revised in 2013 (Directive 2013/39/EU), notably to expand the list of priority substances and to revise the emission limit values for the period after 2015. Hydro has addressed all the relevant requirements of the Water Framework Directive in cooperation with external consultants and the Norwegian Environment Agency. During 2015, the Norwegian plants implemented new water monitoring programs after review and approval of the Norwegian Environment Agency. This will form basis for future longer term water monitoring.

Hydro has facilities that have been operated for a number of years or have been acquired after operation by other entities. Subsurface contamination of soil and groundwater has been identified at many such sites and may require remediation under the laws of the various jurisdictions in which the plants are located. Hydro has made provisions in its accounts for expected remediation costs relating to sites where contamination has been identified that, based on presently known facts, it believes will be sufficient to cover the cost of remediation under existing laws. Because of uncertainties inherent in making such estimates or possible changes to existing legislation, it is possible that such estimates may prove to be insufficient and will need to be revised and increased in the future. In addition, contamination may be determined to exist at additional sites that could require future expenditures. Therefore, actual costs could be greater than the amounts reserved.

Integrated pollution prevention and control
Under the EU Directive on Integrated Pollution Prevention and Control 1996/61/EC (the "IPPC Directive"), industrial installations require national operating permits based on best available techniques (BAT) for pollution prevention and control. The European Commission had issued a guidance document relevant for the aluminium industry: BAT Reference Document (BREF) for the Non-Ferrous Metals Industries (2001). Norwegian authorities established stricter emission limits for the aluminium industry in Norway applying from January 1, 2007, in line with the IPPC Directive. The IPPC Directive was amended by Directive 2010/75/EU on Industrial Emissions (IED), and the new requirements have been applicable since 2013. The related BREF document has also been updated and new BAT conclusions have been adopted in 2016 (Decision (EU) 2016/1032).

European chemical legislation - REACH and CLP
REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) is an EU regulation, adopted to improve the protection of human health and the environment and applies to all chemical substances. REACH places the burden of proof on companies, which must identify and manage the risks linked to the substances produced or imported into EU.

Hydro has different roles under REACH as producer, importer and downstream user and follow the requirements including the requirement to register substances produced and/or imported in volumes above 1 ton/year.

The CLP (classification, labeling and packaging) directive is based on the United Nations' Globally Harmonized System (GHS) and its purpose is to ensure a high level of protection of health and environment. CLP is legally binding and requires manufacturers, importers or downstream users of substances to classify, label and package hazardous chemicals appropriately. Hydro is mainly a downstream user of chemicals and follow the requirements including checking the SDS (safety data sheets) to ensure compliance with exposure scenario and safe use.

Greenhouse gas emissions
The aluminium industry was included in the EU CO2-emissions trading system (ETS) in 2013. The system is regulated by the ETS Directive. The aluminium industry is affected by the scheme directly and also indirectly by the pass-through of CO2 allowance costs by power producers into the power prices ("indirect effects").

Aluminium production is qualified as an industrial sector exposed to a significant risk of "carbon leakage" (i.e. risk of European operations losing market share to less carbon-efficient installations outside the EU). Aluminium producers therefore receive a higher percentage of free emission allowances compared to sectors not exposed to carbon leakage. The free allocation of emission allowances is agreed until 2020. Hydro is currently close to the benchmark values set for our operations, thus the financial impact of these regulations has been minor. However, the present price increase of EU allowances increases the financial effect. Due to increased production volumes and an annual reduction of free allowances, the need to procure allowances is likely to increase up to 2020.

Rolling operations are also covered by the rules and are allocated allowances free of charge based on an energy efficiency benchmark. Hydro is close to, or within, the benchmark values for its remelting activities.

Our primary aluminium production is presently most exposed to indirect EU ETS costs. To mitigate risk of carbon leakage due to indirect CO2-costs, EU allows for national compensation of these costs.

Up to 2020 and except for Sør-Norge Aluminum AS (Husnes), Hydro's fully owned Norwegian smelters do not qualify for indirect carbon cost compensation, as, according to the Norwegian regulations, Hydro's power sourcing (self-generated power and old sourcing contracts entered into prior to implementation of the ETS scheme) does not expose those smelters to increased electricity price due to the introduction of ETS.

The EU is in a process of finalizing the EU ETS for the 2021-2030 period, with the trilogue agreement reached between the Parliament, EU Member States and the EU Commission on November 9th 2017. The agreement gives additional safeguards to European industry with extra protection against the risk of carbon leakage, likely granting 100 percent free allowances up to sector's benchmark level for our direct emissions. Further, the Agreement allows Member States to grant partial compensation in accordance with State Aid rules after 2020. The Commission has started the process of updating the State Aid Guidelines for the period 2021-2030.

The Paris Agreement reached in December 2015, committed all the 197 signatory nations to keep the increase in the global average temperature "well below 2°C", pursuing 1,5°C, by each signatory nation committing to do their best effort to reduce emissions. Further the Agreement require a peak in , greenhouse gas emissions as soon as possible and "Climate neutrality" by 2050-2100. Such efforts could expose Hydro to additional costs in the various countries it operates.

Trade and Tariffs
Trade policy has a growing impact on Hydro's business both within the political and strategic agenda (regional and bilateral Free Trade Agreements, WTO framework, EU trade policy, etc.) as well as more local dimensions like tariffs, anti-dumping and other trade measures. An escalation of trade measures between large economies might impact overall GDP.

EU duty rates on imports are 4 percent on the import of alumina, 3 percent on primary unalloyed aluminium , 6 percent on alloyed aluminium, (except import duty for alloyed rolling slabs and alloyed extrusion billets which are 4 percent, and 7.5 percent on the import of the majority on semi-fabricated products. Aluminium metal produced in the EEA (Norway and Iceland) is exempted from any such duty in the EU. There are also import duties on primary and semi-finished products in other material markets for Hydro.

The EU are negotiating bilateral free trade agreements with various third countries of interest to Hydro, which might, in time, lead to the elimination of aluminium tariffs with such third countries. For example, as of September 2017, customs duties on aluminium in the EU-Canada trade were eliminated. In the EU negotiations pipeline, there are agreements with Japan (finalised but not implemented yet) the Mercosur countries (including Brazil), Indonesia, Australia and New Zealand, among others.

EU has also imposed certain anti-dumping duties on various aluminium products like foil, wheels and radiators, mostly on import from China.

In June 2018, the US administration imposed a levying tariff of 10 percent on all aluminium imports except imports from Australia and Argentina (quota). In the short-term, the tariff has had no significant impact on Hydro's sales while the long-term effects are more uncertain and could have negative impact on Hydro's business.

Taxation in USA
From January 1, 2018 the corporate income tax rate (federal) was reduced from 35 percent to 21 percent. Including state taxes the total tax rates reduced from approximately 38 percent to 25 percent.

Energy – regulation and taxation

The Norwegian regulatory system for hydropower production
The ownership and utilization of Norwegian waterfalls for i.e. hydropower production, other than small-scale power production, requires a concession from the Ministry of Petroleum and Energy. According to legislation passed in 2008, new concessions may no longer be granted to private entities such as Hydro. Moreover, private entities may not acquire nor own more than one-third of the shares or interests in companies that own hydropower plants.

Our waterfall rights and hydropower plants in Norway were acquired and developed under previous legislation that allowed for private ownership. Approximately one-third of our normal annual production in Norway - about 3 TWh per year - was acquired before concession laws were enacted and

does not contain any compulsory reversion to the Norwegian state. About two-thirds of our normal annual production, or 6 TWh per year, is subject to concessions granted at the time the waterfall rights were acquired. Such power plants operate under concession terms of Norwegian state reversion, with individual concessions expiring in two main parts around 2022 and 2050. Hydro's power plants at Røldal-Suldal, with a normal annual production of 3.0 TWh, will be the first significant production facilities to revert to the Norwegian state towards the end of 2022. Reversion to the Norwegian state can be avoided if the power plants, or two-thirds or more of the shares of the entity that owns the power plants, are sold to a public entity prior to reversion. In 2016, an important regulatory change was implemented in Norway that allows for private ownership to waterfalls through companies with unrestricted liability, often referred to as ANS/DA, enabling further progress on Hydro's work to re-structure ownership and protect the value of the assets that are subject to reversion.

Under the current legislation, private entities like Hydro may lease a power plant for up to 15 years.
The Water Framework Directive (2000/60/EC) adopted by the EU and implemented in Norway includes requirements that also affect our hydropower production. Depending on the application of such requirements in practice, there is a risk that they may cause some reductions in production volumes. However, as Hydro's hydropower concessions are subject to time limitations and must be renewed, the requirements in the Water Framework Directive are not expected to imply any major change in Hydro's position.

Taxation of hydropower production in Norway
Profits from Hydro's hydropower production in Norway are subject to ordinary income tax at 23 percent for the income year 2018, being reduced to 22 for the income year 2019. Revenue for ordinary income tax purposes is based on realized prices. Dams, tunnels and power stations are, for tax purposes, depreciated on a linear basis over 67 years, and machinery and generators over 40 years. However, such fixed assets are depreciated over the concession period if that is shorter. Transmission and other electrical equipment are depreciated at a 5 percent declining balance.

A natural resource tax of NOK 13 per MWh is currently levied on water-generated electricity. The tax is fully deductible from the ordinary income tax.

In addition, a special resource rent tax, at 35.7 percent for the income year 2018, being increased to 37.0 percent for the income year 2019, is imposed on hydropower production in Norway. Unlike the ordinary income tax, financial costs are not deductible against the basis for the resource rent tax. Uplift is a special deduction in the net income, computed as a percentage of the average tax basis of fixed assets (including intangible assets and goodwill) for the income year. The percentage, which is determined annually by the Ministry of Finance, essentially provides for a certain return on fixed assets above which income becomes subject to the resource rent tax. The percentage used to calculate the uplift for 2018 was 0.7 percent.

Revenue for resource rent tax is, with certain exceptions, calculated based on the plant's hourly production, multiplied by the area spot price in the corresponding hour. However, revenues from sales under certain long-term contracts are valued at contract price. Revenues from power supplied to Hydro's own industrial production facilities is based on the average contract price in long-term power supply contracts delivered to Hydro.

Bauxite and Alumina – regulation and taxation

Environmental Regulation
Our operations in Brazil are subject to strict environmental regulations and license requirements. Particular regulations apply to our operations in the Mineracão Paragominas S.A. (Paragominas) mine, due to its location in the Amazônia region.

One such regulation, known as the "Environmental Legal Reserve" requires that 80 percent of a property with native forest in the Amazônia region must be preserved, which means that a mine in the region cannot be developed without a sustainable forest management plan in accordance with the regulation. However, in Paragominas the legislation has established 50 percent as minimum requirement for legal reserve. However, based on existent regulations, the State has accepted Paragominas' request for exclusion of administrative servitudes (mining servitudes) from the calculation bases of the legal reserve and Mineração Paragominas S.A comply with the license's requirement.

The practical implication is that for each rural property where Paragominas has current or planned mining operations, the Environmental Legal Reserve must be complied with and approved by the Para state environmental agency SEMAS.

Under Brazilian environmental legislation, any activity that has the potential to pollute the environment must obtain an environmental license before the activity can start. Such licenses are generally granted by the state environmental agency, SEMAS. It is common that licenses granted are subject to a number of conditions to ensure regulatory compliance or to mitigate effects of the operations on the environment or local communities.

Each of our Brazilian operations currently hold several environmental licenses, including environmental installation licenses for respective construction and expansion phases, and environmental operational licenses for their ongoing operations.

Recent major incidents in Brazil (e.g. Samarco and Vale) have increased public awareness and pressure towards authorities and politicians to impose further and stricter regulations and monitoring of the mining industry. In this context further tightening of environmental and mining regulation is expected which may require additional resources to maintain our operations and avoid restrictions or delay in obtaining new licenses in the future

Greenhouse gas emissions
In 2009, Brazil addressed its national policy on climate change through a federal law which set out ambitious voluntary targets for reducing greenhouse gas (GHG) emissions until 2020 – most of which has already been achieved. In the end of 2015 Brazil has submitted even more

ambitious targets (37 percent cut in GHG by 2025 and 43 percent until 2030 compared to 2005 levels) during the United Nation Climate Change Conference in Paris. Since 2010 authorities have been developing sectoral plans to cut emissions and discussions continue regarding a sectoral plan for the aluminum industry, which currently follows a general plan developed in a cooperation agreement between the Ministry of Environment, the Ministry of Development, Industry and Foreign Trade and the National Confederation of Industry signed in 2012. The current plan has an ambition of reducing greenhouse gas emissions by 5 percent by 2020 compared to a "business as usual" scenario of projected emissions.

The newly elected president of Brazil, Jair Bolsonaro, who took office in January 2019, and his government has indicated policy changes on energy and deforestation. This includes the Brazil commitment under the Paris Agreement.

Mining regulation
Exploration of minerals requires an exploration license from the federal mining agency. The license grants an exclusive right to explore an area, subject to several requirements including compensation to the land owner and payment of an annual exploration fee to the ANM. Currently, the annual exploration fee is BRL 3.29 per hectare for the initial term of the license, and BRL 5 per hectare for any renewal periods.

If the exploration identifies viable resources, a mining concession is granted by the Ministry of Mining and Energy. The concession includes an obligation to pay royalties to the government and landowners. For bauxite mining, sales royalties are calculated based on gross revenue derived from sales of minerals after certain tax deductions. Consumption royalties are calculated based on the market price or the reference price defined by the federal mining agency. Government royalties on bauxite amount to 3 percent and are allocated between local (currently 60 to 75 percent), state (currently 15 to 30 percent) and federal governments (currently 10 percent).
In December 2018, amendments to the Brazilian Mining Code came into force. The new framework aims at fostering competition in the mining industry and introduces internationally established concepts such as mineral resources and reserves. The rules are further targeted at avoiding the indefinite validity of exploration licenses, e.g. in case of lack of activity from the mining right holder, and improving regulation on current industry issues, such as (re)use of tailings and industrial waste.

With the new framework a new regulatory mining agency (ANM) has also been established. ANM has replaced the former mineral licensing body, the National Department of Mining Production ("DNPM"). Although incorporated under the same legal regime, as a fully-funded federal body ("autarquia"), the ANM has been set up under a special regime with a greater level of administrative independence and financial autonomy. It will also play a larger role in regulation, being responsible for implementing the guidelines, directives and policies of the legal mining framework.

Taxation in Brazil
In Brazil, the tax system is complex and volatile, with a broad range of direct and indirect taxes levied at the federal, state and municipal levels. Over the past several years, state finances in Brazil have deteriorated, which could lead to mounting pressure to increase tax revenues. Brazilian tax authorities generally take an aggressive approach in tax audits, giving rise to a large number of tax disputes, which tend to take a very long time until finally resolved.The general income tax rate in Brazil is up to 34 percent of net income.

Federal value added tax (PIS/COFINS) is charged on sales at a rate of 9.25 percent. Buyers are entitled to PIS/COFINS tax credits of 9.25 percent on purchases of relevant input factors (except for import of goods, which is 11.75 percent), which may be used to offset PIS/COFINS or federal income tax liabilities. Exports are exempt from PIS/COFINS. Because most of Hydro's production in Brazil is exported, we accumulate tax credits. Obtaining cash refunds of tax credits is complex and can take substantial time.

ICMS is a value added tax charged by Brazilian states on circulation of goods, energy and services. ICMS tax rates vary from 7 to 25 percent and the tax base is the gross value of the transaction, including ICMS. Brazil has a general ICMS exemption on exports. Hydro's main operations in Brazil are located in the state of Pará, which has historically granted a deferral of the collection point for ICMS on certain goods and services. In 2015, the state of Pará granted a renewal of the ICMS deferral regime for Hydro Paragominas, Hydro Alunorte and Albras for a 15-year period. With this regulation, the companies are not entitled to book ICMS credits and the deferred ICMS tax is not due on the exports of goods. This regime is subject to several conditions which Hydro must comply with on an ongoing basis concerning verticalization of the aluminium value chain in Pará, contribution to development in the region and enabling sustainable growth in Pará. The ICMS deferral is subject to approval by Brazil's National Council of Finance Policy (CONFAZ). In 2018 Public Auditing Prosecutors for the State of Para (MP-C/PA) initiated a general process before the State Accounting Court to better understand approvals, compliance and transparency of tax incentives established by the State of Para. A discontinuation of the ICMS deferral would materially adversely affect Hydro's operating results from its Brazilian operations.

Other information

As a public limited company organized under Norwegian law, Hydro is subject to the provisions of the Norwegian Public Limited Companies Act. Our principal executive offices are located at Drammensveien 260, Vækerø, N-0240 Oslo, Norway; telephone number: +47 2253 8100. Hydro's internet site is www.hydro.com

The Alunorte situation

72 Background

73 No overflow from Alunorte's bauxite residue deposits

73 Insufficient freeboard prompted production embargo

73 Embargo against use of new bauxite residue deposit (DRS2)

73 Alunorte discharged partly treated rainwater

74 Supporting communities following flooding

74 Operational upgrades to Alunorte

75 Strengthening our community engagement

75 Working together in Barcarena

75 Impact on employees

76 Dialogue with Brazilian authorities to resume normal operations

Quick overview

In February/March 2018 Brazilian authorities ordered several measures against Hydro's Alunorte alumina refinery, including reduced production, while reviewing allegations that flooding following two days of extreme rainfall might have led to harmful spills into the surrounding areas.

More than 90 investigations and inspections were conducted by the relevant authorities, including Ibama and Semas, and confirm there were no leaks or overflow from Alunorte's bauxite residue deposits.

Hydro is in dialogue with all the relevant authorities, at the local, regional and national level in Brazil. We continue to seek a common agreed solution, so we can resume normal operations, using the new and modern deposit area and the state-of-the-art press filters.

At the time of authorizing this report, the production embargoes on Alunorte remains in force. The timing with regards to when the embargoes may be lifted remains uncertain.

Background

In February 2018 the region of Barcarena in northern Brazil suffered from flooding following two days of extreme rainfall. The areas flooded included Hydro's Alunorte alumina refinery. Based on allegations, Brazilian authorities and local communities were concerned that flooding might have led to harmful spills into the surrounding areas. The authorities ordered several measures against Alunorte while reviewing the situation. The measures restricted the production at the refinery to 50 percent of its capacity. Consequently, Alunorte's primary bauxite source Paragominas and Hydro's part-owned subsidiary Albras aluminium plant, both in the state of Pará, reduced their production by 50 percent.

More than 90 investigations and inspections were conducted by the relevant authorities, including Ibama and Semas, and confirm there were no leaks or overflow from Alunorte's bauxite residue deposits.

Since the rainfall event in February 2018, Alunorte has implemented operational changes including specific improvements, and we have improved the way we collaborate with local communities and act as a neighbor.

Already before the heavy rainfalls 16 to 17 February, there were local reports, in particular in social media, that there were leakages from the bauxite residue deposits. The concerns related to alleged contamination of the surrounding area and local communities. The Brazilian authorities were likewise concerned and initiated multiple inspections of Alunorte.

Bauxite residue is an alkaline by-product of the alumina refining process. At Alunorte, advanced filter technology reduces the moisture, before the bauxite residue is dry-stacked and stored in bauxite residue deposits.

The rainwater that falls on these solid residue deposits is drained to the edges, and from there goes via a drainage system to containment basins. This water, which has been in contact with the bauxite residue, is then processed through the water treatment plant at Alunorte where it is treated before being discharged into the Pará river.

Enhanced dry-stacking concept
The use of modern press filters, built in connection with the new bauxite residue deposits DRS2, can reduce the residue moisture content to 22 percent, down from 36 percent achieved with the drum filter technology. This improves the geotechnical safety of the deposit.

An enhanced dry-stacking concept of drier bauxite residue makes it possible to stack the residue at a steeper slope, at around 20 degrees. Thus, it is possible to store four to five times more residue in a given disposal area, reducing the area needed for storage and lowering the relative environmental footprint.

Barcarena site layout

Hydro's Alunorte alumina refinery is the world's largest alumina refinery outside China. The refinery is situated next to the Pará river in the region of Barcarena, Pará, in northern Brazil.

No overflow from Alunorte's bauxite residue deposits

More than 90 investigations and inspections were conducted by the relevant authorities and confirm there were no leaks or overflow from Alunorte's bauxite residue deposits. Also, third party studies have reached to the same conclusions.

The inspections and studies include:
- Ibama – Brazilian Institute of the Environment and Renewable Natural Resources (a federal environmental agency under the Ministry of Environment).
- Semas – the Secretary of State for Environment and Sustainability (environmental agency in the state Pará).
- Civil Defence
- Semade – the Secretariat of Environment and Economic Development of Barcarena (environmental agency in the city of Barcarena)
- Study by professors from the Federal University of Campina Grande, Brazil
- SGW Services (a Brazilian environmental consultancy, hired by Hydro to conduct an independent review of Alunorte and the impact of the heavy rainfall)

Insufficient freeboard prompted production embargo

On February 24, the environmental agency in the state of Pará, Semas, notified Alunorte to comply within 48 hours with the 1-meter required freeboard in the containment basins for rainwater that is drained from the bauxite residue deposits.

The freeboard-limit requires Alunorte to have a 1-metre distance between the top of the water containment basin and the water level as a safety precaution. When Alunorte did not meet Semas' deadline for the required freeboard by February 26, Semas demanded that Alunorte reduced production at the refinery by 50 percent. Alunorte managed to restore the required freeboard on February 27.

January 15, 2019 Semas issued a technical opinion confirming that Alunorte can operate safely at its installed capacity in respect of effluent treatment.

Embargo against use of new bauxite residue deposit (DRS2)

Alunorte has two bauxite residue deposit areas – the current DRS1 and the new DRS2. DRS1 is approaching its end of life, and studies and tests on how to best rehabilitate the deposit are ongoing. Until October 2018, DRS1 made use of drum filters to reduce the moisture in the bauxite residue.

In 2014, Alunorte made a BRL 1 billion investment decision to build a new bauxite residue deposit area, DRS2, which makes use of an industry-leading technology for handling bauxite residue. Alunorte's plan was to start using the press filters for the commissioning phase of DRS2 and thus be able to scale down the use of drum filters for DRS1.

In addition to the production restriction at Alunorte, an embargo was enforced by the authorities on the press filters and on the bauxite residue deposit area (DRS2) which were under commissioning. Using DRS2 in combination with new state-of -the art press filters is the only viable long-term solution for Alunorte to dispose bauxite residue. The current bauxite residue deposit area (DRS1), has an estimated remaining capacity of around 12-18 months based on volume of bauxite residue processed by the press filters. The timing depends on both actual production volumes from Alunorte and DRS1's final regulated capacity, which is currently being subject to geotechnical verifications.

On October 25, 2018 the embargo previously imposed by Ibama on DRS2 and the press filters was suspended. Alunorte is continuing to work with relevant authorities to resume installation and commissioning and to seek the permission for an operational licence to utilize the new deposit area DRS2.

Alunorte discharged partly treated rainwater

The rain water that falls inside the Alunorte refinery area is to be collected and processed in the refinery's water treatment plant before being released into the Pará river. However, in order to manage the situation and safeguard the treatment of water from the bauxite residue deposits during and following the heavy rainfall in February 2018, Alunorte discharged partly treated rainwater from the refinery area as an emergency measure. This was done through the original water discharge channel (Canal Velho), which was no longer licenced for such use. There were also two incidents of untreated rainwater being discharged from the refinery area, one from cracks in a sealed pipe and one of rainwater from the roof of the coal storage shed.

We asked the environmental consultancy SGW Services to review the environmental impact of these three incidents, and they concluded there was no indication or evidence of contamination to nearby local communities, nor any significant or lasting environmental impact to nearby rivers from Alunorte as a result of the extreme rainfall.

Rainfall event of February 2018

There were three incidents of rainwater being discharged from the refinery area during the rainfall event. There were no leaks or overflow from the bauxite residue deposits.

Supporting communities following flooding

In response to the flooding in the Barcarena region, Alunorte collaborated with local institutions to provide emergency response to the neighboring communities of Burajuba, Bom Futuro and Vila Nova in Barcarena. About 2,000 families in these communities close to Alunorte have received medical assistance and clean water provided via or directly from Hydro. About 20 million liters of water were distributed and 7,000 health consultations were performed in 2018.

Hydro distributed about 20 million liters of water to neighboring communities in Barcarena in 2018.

Operational upgrades to Alunorte

Our clear ambition is to make Alunorte the benchmark in our industry, ensuring sustainable operations and social development in the communities around us.

Hydro has initiated several investments related to the wastewater handling and treatment systems at Alunorte, totaling BRL 675 million (around NOK 1.5 billion). These aim at increasing the wastewater treatment capacity by 50 percent by the end of second quarter 2019 and the water reservoir capacity by 350 percent completed as of January 2019, as well as strengthening the infrastructure related to the water management system and enhancing robustness and flexibility of the system.

It is the amount of rain that determines the required water treatment capacity. Of the water safely collected and treated at Alunorte, an estimated 80 percent is from rainwater. This comes either from the refinery area or from the rainwater basins of the bauxite residue deposits. Thus, the water treatment capacity remains fairly constant whether we produce alumina at 50 percent or 100 percent plant capacity. With its new water treatment capacity, Alunorte will be able to treat even increased rainfall in case of more extreme weather and increased precipitation.

The water reservoir capacity at Alunorte has been increased by 350 percent since the rainfall event.

Strengthening our community engagement

Hydro can only succeed as a company if the societies around us are viable, and if our stakeholders support us and trust us. We are committed to a sustainable development of the local communities in the surrounding areas of our three plants in the state of Pará – the alumina refinery Alunorte, the primary aluminium plant Albras and the bauxite mine Paragominas.

The United Nations (UN) encourages businesses to align their corporate strategies with the UN's sustainable development goals to better achieve results on social, environmental and economic issues facing the world. In Hydro, we have aligned our corporate social responsibility (CSR) strategy globally and in Barcarena with a special emphasis on three of the UN's 17 sustainable development goals.

Goal 4: Quality education. We want to contribute to quality education, which also helps secure local employment.

Goal 8: Decent work and economic growth. This includes promoting human rights and worker rights in our own operations and local communities, but also with regards to our suppliers and joint ventures. We also aim to help foster economic growth in our local communities.

Goal 16: Peace, justice and strong institutions. Our aim is to strengthen local communities and institutions through increased capacity building.

We believe these goals are fundamental drivers of long-term sustainable development and reflect what our stakeholders expect us to contribute with in the communities where we operate, including in Barcarena.

Working together in Barcarena

Hydro has stepped up its efforts to be a trustworthy partner in Barcarena. We want to help address the societal challenges in the region.

In response to the flooding in the area, Alunorte has expanded its voluntary social measures for communities close to the refinery. Alunorte continues to support the communities with immediate needs for water supply and health services and has committed to contribute to long-term improvements.

To succeed in contributing to development in Barcarena, we need to work in partnerships with local communities, civil society organizations, academia and the Brazilian authorities. To support broad collaboration for social change in Barcarena, Alunorte has committed BRL 100 million (around NOK 200 million) in local community investments through the Sustainable Barcarena Initiative, which will be supporting local communities over the next 10 years. The initiative will establish an independent organization, bringing stakeholders together to discuss, prioritize and decide on critical issues in Barcarena, reduce conflict level, and strengthen the ability of local actors to drive social change and development in Barcarena. This initiative is closely linked to our CSR strategy, launched in 2017, and our emphasis on strengthening and enabling local stakeholders to drive change and development.

Impact on employees

Hydro is committed to preserving as many jobs as possible during the embargo. Among the measures introduced to preserve jobs is collective vacations for both refinery and mine workers. Around 1,000 employees from Alunorte and Paragominas were on alternating, paid collective vacations between March and July 2018. Ministerio Público de Trabalho (which is the public prosecutor for labor issues) and the respective trade unions were informed in advance.

At Alunorte, 121 employees were dismissed, all unrelated to the Alunorte situation. Of these, 53 were related to the change in technology from drum filters to press filters.

Paragominas has temporarily suspended employment contracts of 240 employees, with an aim of maintaining these jobs long term. This is regulated under Brazilian law, and the affected employees still receive pay and they take part in training programs organized by Hydro. We have however had to reduce the number of external contractors by 175 at Paragominas.

Dialogue with Brazilian authorities to resume normal operations

Hydro is in dialog with all the relevant authorities, at the local, regional and national level in Brazil. We continue to seek a common agreed solution, so we can resume normal operations, using the new and modern deposit area and the state-of-the-art press filters. The timing of a full resumption of operations remains uncertain.

On September 5, 2018 Alunorte signed two agreements with the government of Pará and Ministerio Público representing an important step towards resuming normal operations. The agreements regulate certain technical improvements, audits, fines, studies as well as additional investments related to the social development of communities in Barcarena. The combined investments, costs and fines are estimated at BRL 360 million (around NOK 750 million), of which about BRL 33 million (NOK 65 million) relates to fines which have been paid and BRL 65 million to the food cards. See note 35 to the consolidated financial statements for more information.

The fines include all Semas' fines except one which is still subject to discussion. The agreements cover technical studies and improvements as well as audits and monitoring systems to further increase the safety of Alunorte, and a plan for social investments by Hydro in Barcarena that comes in addition to the Sustainable Barcarena Initiative.

A technical Term of Adjustment of Conduct (TAC) – signed with the Ministério Público and the Government of Pará/SEMAS, regulates certain technical studies and improvements, audits, payments of fines, and payments for food cards to families living in the hydrographic area of the Murucupi river. A social Term of Commitment (TC) – signed with the Government of Pará – addresses additional efforts and investments related to the social development of communities in Barcarena and amounts to BRL 150 million.

At the time of authorising this report, the production embargoes on Alunorte as well as the embargoes on DRS2 by the Federal Court, both civil and criminal, remains in force. The timing with regards to when the embargoes may be lifted remains uncertain. Once the embargoes are lifted, it is expected to take around 2 months to reach 75-85 percent of Alunorte's nameplate production capacity. The timing of a return to full production capacity at Alunorte depends on the commissioning process of DRS2 and the press filters.

Viability performance

78 Viability – The Hydro Way
80 Energy and climate change
82 Resource management
86 Integrity, human rights and community impact
94 Organization and work environment
99 Innovation and design thinking

Quick overview

This chapter includes relevant information related to Hydro's approach to environmental and social performance as well as innovation and design thinking.

More quantitative information is included in the Viability performance statements later in this report. It consists of Hydro's environmental and social statements with notes.

We have an integrated approach to our reporting, and our Viability performance should be seen in context with the other parts of Hydro's Annual Report 2018.

Hydro reports in accordance with the GRI Standards' "Core" option. Please see our GRI index at www.hydro.com/gri

Viability - The Hydro Way

The Hydro Way is our approach to business. It's an approach that has lived within Hydro since 1905 and guided our development over the years. The Hydro Way originates from our company's identity – our unique set of characteristics – and constitutes a way of doing things that differentiates us from other companies. As part of the integration of Extruded Solutions following the acquisition of Sapa in 2017, The Hydro Way was updated in 2018 to better reflect the new identity of the company.

The Hydro Way explains how we run our business through:

- Our purpose
- Our values
- Our operating model

These principles help us set priorities and serve as a reference point when questions arise. Our purpose is supported by our values and defines how we conduct our business:

Hydro's purpose is to create a more viable society by developing natural resources into products and solutions in innovative and efficient ways.

In order to ensure a uniform high standard, Hydro's constituting documents and global directives lay down requirements for our operations, see page 135.

All elements of Hydro's viability performance are integrated in Hydro's overall group strategy. In addition, we have specific support strategies e.g. on climate change, environment and people - as described in this section.

Hydro has been listed on the Dow Jones Sustainability Indices (DJSI) each year since the index series started in 1999. We are also listed on the corresponding UK index FTSE4Good, and the UN Global Compact 100 stock index.

MEMBER OF
Dow Jones Sustainability Indices
In Collaboration with RobecoSAM

FTSE4Good

Our reporting approach

We have based our viability reporting on The Hydro Way since 2004. Together with risk analysis and an extensive stakeholder dialogue we have defined the main elements of our reporting:

- Energy and climate change
- Resource management
- Integrity, human rights and community impact
- Organization and work environment
- Innovation

We use the GRI Standard 101 (2016) in defining which lower-level topics and indicators that are material to report upon. The analysis is also based on our continuous stakeholder dialogue with key stakeholders and collected and evaluated by relevant specialists and leaders. The materiality analysis is updated annually, to reflect internal and external developments, and approved by Hydro's Corporate Management Board.

The most material aspects related to our viability performance are all included in the Board of Directors' report, which gives a high-level overview of Hydro's strategic direction, strengths and challenges. This information is further elaborated in other parts of this annual report and in the GRI index at www.hydro.com/gri

The information has been reviewed by Hydro's Corporate Management Board, which has also approved this annual report. The board of directors has approved the complete Board of Directors' report including the country-by-country report and the UK Modern Slavery Act transparency statement. Read more about our reporting principles and materiality process on page 230.

The Viability performance section should be read in context with the other parts of the annual report, in particular:

- Letter to shareholders on page 8
- Board of Directors' report on page 12
- Business description on page 33 including strategic targets and business area specific issues related to technology and innovation, environment and society
- The Alunorte situation on page 71
- Risk review on page 120
- Corporate governance on page 134

The underlying details in the reporting are based on different reporting frameworks that are important to us, including the UN Global Compact, the GRI Standards, the International Council on Mining and Metals' (ICMM) 10 principles and Position Statements and the Aluminium Stewardship Initiative's (ASI) 11 principles and underlying criteria. The GRI index at www.hydro.com/gri also shows Hydro's adherence to the UN Global Compact, ICMM and how we relate to ASI, UN Sustainable Development Goals and UN Guiding Principles on Business and Human Rights - and shows how the different frameworks connect with each other.

Hydro's materiality analysis 2018

Topics are prioritized in four quadrants, but not prioritized internally in each quadrant

The matrix is based on the GRI Standard 101 Foundation 2016 and has been approved by Hydro's Corporate Management Board. The green topics represent those that are most material to Hydro, while topics that are strikethrough, are considered not material. We have chosen to merge and rename certain aspects in the matrix to make the titles more relevant to Hydro and thus also more intuitive to our stakeholders. An overview of these changes can be found on www.hydro.com/gri

The main changes compared to 2017 are:

- The most material topics "Freedom of associaton & collective bargaining", "Human rights assessment", "Indigenous rights" and the material topic "Resettlement" have been merged and renamed "Human and workers' rights"
- The topic "Fines and other sanctions" has become most material following the Alunorte situation
- "Transport" and "Conflict minerals" that earlier were classified as not material, have become material topics

Topics marked (HD) are defined by Hydro in addition to the GRI defined topics.

Energy and climate change

Alumina refining and electrolysis of primary aluminium are energy-intensive processes, and constitute the majority of Hydro's greenhouse gas (GHG) emissions. The energy source is a decisive factor on relative as well as total emissions. On the other hand, aluminium can save significant amounts of energy and GHG emissions in the use phase.

Climate change

Hydro's ambition is to be carbon-neutral in a life-cycle perspective by 2020. Carbon neutrality can be defined in many ways, and our definition is the balance between the direct and indirect emissions from our own operations, and the savings of applying our metal in the use phase.

By taking the life-cycle perspective in our production, we aim to reduce total GHG emissions globally through our activities.

Hydro's climate strategy is an integral part of our overall business strategy, aiming at driving improvements and development within the company. Consequences to the climate strategy is also a criterion for all significant investment decisions. The strategy includes reducing the environmental impact of our operations as well as taking advantage of business opportunities by enabling our customers to do the same. While some production plants or products might have a higher carbon footprint than others, the overall company balance (the difference between emissions and benefits) should be zero or negative by 2020.

Direct greenhouse gas emissions from Hydro's consolidated activites

Emissions in 2018 decreased due to the embargo at Alunorte, and curtailment at Albras and Paragominas.

Hydro's prognosis for GHG emissions from 2017 showed an increase towards 2020 as a result of expected increase in production of alumina and primary aluminium from 2018 and onwards. The current reduced production at Alunorte from February 2018 has significantly reduced Hydro's GHG emissions in 2018, resulting in Hydro being carbon neutral in 2018 if considering scope 1 and scope 2 emissions only. If considering scope 3 emissions from purchased alumina due to the supply deficit, Hydro is not carbon neutral in 2018. Hydro is, however, still on track towards being carbon neutral in a life-cycle perspective in 2020. This will be achieved by:

- Increased production of primary aluminium in Norway, which is based on hydropower
- Increased recycling
- Increased deliveries to the automotive sector

Carbon neutrality in 2020 will, however, require that we succeed in increasing our Norwegian capacity according to plan, and that we are able to increase our recycling of post-consumer scrap. With the increase of GHG emissions from Extruded Solutions, it is uncertain whether their share of post-consumer scrap is sufficient to compensate. Our carbon neutrality is also sensitive to our penetration into the automotive market. The planned fuel switch project at Alunorte is not included in the forecast by 2020 and will, if realized, further improve Hydro's carbon balance.

For more information about Hydro's climate model, see https://hydro.com/globalassets/1-english/our-future/environment/Hydroclimatemodel.pdf

In 2018, Hydro concluded a review of its climate-related risks, including physical, technological, commercial, legal and reputational risk. The review forms the basis for scenario analyses and an update of the climate strategy. Hydro is a signatory to the Task Force on Climate-Related Financial Disclosures (TCFD). See page 267 for more information.

Using viable energy sources

The overall carbon footprint of primary aluminium is highly dependent on the source of energy used to produce the metal. The energy source available is a determinant for localization of Hydro's investments and for the carbon footprint of the metal produced. About 70 percent of Hydro's production of primary aluminium is based on renewable power.

In order to ensure continued supply of renewable power to Hydro's operations in Norway after 2020, Hydro has entered into four long-term power sourcing contracts. The total energy contracted in 2018 for the years 2021 to 2030 is 2.2 TWh. For more information please see Energy in the Business description section in this document.

The Qatalum aluminium plant has natural gas as its energy source. The International Panel on Climate Change recognizes natural gas as an important transition fuel that can help reduce global temperature increases. Hydro owns 50 percent of Qatalum. Our share of Qatalum's production represents about 15 percent of our total primary metal production capacity.

Greenhouse gas emissions from Hydro's ownership equity

Million metric tons CO2e

Emissions in 2018 decreased due to the embargo at Alunorte, and curtailment at Albras and Paragominas.

Reducing energy consumption and emissions in production

Energy efficiency is an important part of Hydro's ongoing efforts to reduce costs and CO_2 emissions. Our Alunorte alumina refinery in Brazil is among the most energy-efficient refineries in the world. A technical concept for the replacement of part of our fuel oil consumption at Alunorte to more climate and cost-efficient natural gas is under development.

Average electricity consumption at our consolidated smelters is 13.9 kWh per kilogram primary aluminium produced, just below the global average of about 14 kWh. The Karmøy technology pilot is currently testing Hydro's next generation smelter technology with potential electricity reductions of 10-14 percent, see section Innovation and design thinking, page 99. The Karmøy technology pilot is testing this technology on an industrial scale.

Mid-term strategic goals: Energy and climate change

	Ambitions	Medium-term target	Timeframe	2019 target	2018 target	2018 progress	Status
Better	Extend technology lead with Karmøy technology pilot	Full ramp-up	Q2 2018			Jun 27,2018	●
Bigger	Increase nominal automotive Body-in-White capacity	200,000 mt/yr	2017	200,000 mt/yr[1)]	200,000 mt/yr	Ramping up, qualifications ongoing	●
	Complete ramp-up of UBC recycling line	>40,000 mt/yr	2017	Ramp-up completed[1)]	Ramp-up completed	Delayed to Q4 2019	●
	Deliver additional hydropower production volumes through upgrades/sustaining investments	~ 0.1 TWh	2020	Continuous progress	Continuous progress	80 percent	●
Greener	Become carbon-neutral from a life-cycle perspective	Zero	2020	Establish climate strategy towards 2030	Review climate risk analysis	On track[3)]	●
	Deliver on reforestation ambition	1:1	Continuous	1:1	1:1	On track	●
	Deliver on reforestation ambition	Eliminate historical rehabilitation gap	2020		Continous process	Completed, historical gap closed	●
	Increase recycling of post-consumer scrap[2)]	>250,000 mt/yr	2020	195,000 mt/yr[4)]	155,000 mt/yr	148,000 mt/yr	●
	Continuously reduced specific GHG emissions/mt from electrolysis	EU benchmark	Long-term	1.57 mt CO2e/mt aluminium	1.57 mt CO2e/mt aluminium	1.60 mt CO2e/mt aluminium	●

1) 2017 target not met, current target updated
2) Includes Hydro's share of recycling in Alunorf
3) From 2018 the target covers two hydrological seasons. This revised definition takes into account the nature of the mining cycle, and the time lag is necessary to ensure quality rehabilitation to restore biodiversity.
4) Original target of 250,000 mt/yr will not be met by 2020

Green light: Ambition on track and on target; *Amber light*: Ambition behind plan, but on target; *Red light:* Ambition might not meet the medium-term target

Reducing CO2 emissions through the use of our products

Aluminium has significant carbon footprint benefits in its use phase, especially due to its lightweight properties. As Hydro has limited production of end-consumer goods, the calculation of use-phase benefits can only to some degree be based on product specific data. We therefore use acknowledged, independent LCA (Life Cycle Assessment) studies to calculate the use-phase benefits in combination with product shipment data. Use-phase benefits can best be documented in the automotive sector.

We work closely with customers to develop products that save energy and reduce emissions. Examples include lighter transportation, better packaging to reduce cooling needs and food spoilage, and aluminium façades that lead to lower operating costs and enable buildings to generate as much energy as they use during operation.

Increasing recycling of aluminium

The inherent properties of aluminium make recycling attractive. It can be recycled infinitely without degradation in quality, and recycling requires 95 percent less energy than primary aluminium production.

Hydro is a large remelter and recycler of aluminium. We remelt process scrap from our own production and from other companies, as well as post-consumer scrap from the market. We are increasing our capacity to process post-consumer scrap by a total of 80,000 metric tonnes, through two projects, one in Clervaux, Luxembourg, and the other by a used beverage can line in Neuss, Germany. Finalization of the ramp-up in Neuss has been further delayed to the end of 2019.

We have developed processes to combine clean scrap with post-consumer scrap, and we are investing in existing remelters to increase our post-consumer scrap capacity by up to 20 percent. We have just finalized an investment in our plant in Lucé, France. An investment in our remelter in Azuqueca, Spain, is planned for commissioning in early 2020.

Hydro's patented technology in scrap shredding and sorting is under further development, making it possible to produce high-quality extrusion and sheet ingot from post-consumer building and automotive scrap. Our 75R product line with a guaranteed minimum of 75 percent post-consumer scrap, provides the lowest carbon footprint in the aluminium industry and is competing with PVC and even wood.

To further develop the sorting process of aluminium scrap into alloys, we installed a pilot line in the R&D center in Bonn, Germany, in 2017. We are working on projects to industrialize the technology for application towards automotive and other relevant materials.

While we based on a commercial evaluation see that the recycling target originally set for 250,000 mt/year of post-consumer scrap by 2020 will not be met, we continue to develop recycling capacity that can be used for post-consumer scrap as well as for process scrap.

Resource management

Hydro's bauxite mining and alumina refining activities in Pará in Brazil include open pit mining and the handling of significant amounts of tailings and bauxite residue, the latter also known as red mud. Preserving biodiversity is important related to Hydro's activities in Pará and to the water reservoirs for our hydropower production in Norway, please see section Operations – Energy on page 64. Hydro has primary aluminium production in Australia, Brazil, Canada, Germany, Norway, Qatar and Slovakia.

For information related to the Alunorte situation, see the separate section in this report.

In addition to the existing climate and recycling strategies, we prioritize the following areas:

- Ecosystems and biodiversity
- Water stewardship
- Waste and efficient resource use
- Product stewardship

A new environment strategy, including legacy management, is under development.

Ecosystems and biodiversity

When developing new projects, we perform an environmental risk analysis as part of our impact assessment, following internationally recognized guidelines (e.g. IFC) and identify mitigating actions that will facilitate our ambition of achieving no net loss of biodiversity. This is an area under development internationally, and we participate

in the Cross Sector Biodiversity Initiative (CSBI), which is a joint effort between ICMM (the mining industry), IPIECA (the petroleum industry) and the Equator Principles Association.

Although originally set as a target for 2017, the 1:1 land rehabilitation target in our mining areas continues to apply as it provides a solid driver for rehabilitation. It has, however, become a rolling target, aiming for a 1:1 rehabilitation of areas available for rehabilitation over two hydrological seasons after release. This revised definition takes into account the nature of the mining and rehabilitation cycles, and the time lag necessary to ensure quality rehabilitation to restore biodiversity. It also takes into account that land periodically needs to be set aside for temporary infrastructure in order to safely operate the mine.

The emerging reforestation gap is due to infrastructure areas made available in 2018 for rehabilitation, as well as failed areas of historical rehabilitation.

The 2020 target of closing the historical rehabilitation gap inherited from the former operator was achieved in 2018. See note E6.2 to the Environmental statements for further information.

When tailings dams are closed, they need to settle for at least five years before they will be available for rehabilitation. We will then get a new rehabilitation gap. This will differ from the rehabilitation gap that Hydro adds to on a daily basis as a result of its mining (due to the specific nature of tailings) and will require a tailor-made rehabilitation strategy.

To increase our knowledge and secure a science-based approach to rehabilitation, the Biodiversity Research Consortium Brazil-Norway (BRC) was established in 2013, learn more about our partnerships on page 92.

Since 2013, Hydro has used the nucleation method in Paragominas. Topsoil is unevenly distributed to simulate natural landscape and trap rainwater. Piles of cut wood are distributed, creating shelters for animals and improving growing conditions for some plant species. The ambition is to establish a forest system of the same structure that is typical of the forest in the area and to secure as much biodiversity as possible. The method has been approved for testing in MRN and Paragominas by the relevant environmental authorities and is showing encouraging results.

All of our hydropower reservoirs are located within or in close proximity to national parks and other protected areas in mountainous regions in southern Norway, including Hardangervidda and Jotunheimen. We strive to minimize the potential environmental impacts associated with Hydro's operations including changes in aquatic and terrestrial habitats along the waterways and impact on recreation and tourism. See section Operations – Energy on page 64 for more information.

Water

Our main impact on waterways comes as a result of discharges to external water bodies, primarily in Brazil (to rivers) and Norway (to rivers, lakes and fjords). Where the authorities deem it appropriate, these discharges are regulated by relevant permits. Water withdrawal of groundwater from our own wells and through public water works may in addition have an effect on life below water.

Hydro uses the WBCSD global water tool to perform an annual review of water withdrawal from water-stressed areas. The mapping of Hydro's sites in 2018 showed that 0.3 percent of our overall fresh-water input came from water-stressed areas, with regard to annual renewable water supply (according to the definition used by WBCSD). Qatalum in Qatar relies on public water supply produced by desalination. Seawater is used for wet cooling towers at the power plant as well as for wet scrubbers at the potline fume treatment plants.

In 2017, Hydro developed a basic water risk analysis tool, covering water use and discharge, to be applied across key operations. Preliminary findings supported the results of the WBCSD global water tool - operating in water-stressed areas is not a material risk for Hydro's key operations. Instead, the more material risks are linked to the management of excess water and the quality of the external bodies into which Hydro discharges process water. The previous water-related target, to reduce water use in water-stressed areas, has thus been set aside.

Our alumina refinery Alunorte in Brazil obtains an important part of its water supply through the bauxite slurry that is transported from Paragominas by pipeline. Paragominas' and Alunorte's water use is close to their current regulatory limits. To learn more, see note E2.3 to the environmental statements.

Based on new hydrological studies of the Parariquara river, Paragominas' water extraction permits were revised in 2018. However, water collection can still be an issue if a new third-party user requests water extraction from the same watershed. If so, a new license will be needed for an additional extraction point.

The Norwegian Environment Agency has required Hydro to clean up historical contamination in the Gunnekleiv Fjord by 2022. The work is progressing according to the plan. We are exploring alternative methods in cooperation with the relevant authorities.

For more information about the impact of our water reservoirs related to hydropower production, please see section Operations – Energy on page 64.

Mid-term strategic goals Resource management

	Ambitions	Medium-term target	Timeframe	2019 Target	2018 Target	2018 progress	Status
Better	Best available technology or similar implemented for treatment, storage and use of bauxite residue	New press filters in full operation	2019	Ramp-up of press-filters completed	Ramp-up of press-filters completed	Ramp-up behind schedule due to Alunorte embargo	●
	Reduced waste to landfill	60 percent reduction compared to a 2010 baseline[1)]	2020	Waste management plans for key streams developed	Fully achieve 2017 target and extend to cover Extruded Solutions	Development of waste management plans behind schedule	●
Bigger							
Greener	Deliver on reforestation ambition	1:1[2)]	Continuous	1:1	1:1	On track	●
	Deliver on reforestation ambition	Eliminate historical rehabilitation gap	2020		Approach target	Target achieved	●

1) Excluding tailings and bauxite residue. It also excludes construction and demolition waste.
2) From 2018 the target covers two hydrological seasons. The revised definition takes into account the nature of the mining cycle, and the time lag necessary to ensure quality rehabilition to restore biodiversity.

Green light: Ambition on track and on target; *Amber light*: Ambition behind plan, but on target; *Red light*: Ambition might not meet the medium-term target

Waste and efficient resource use

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Our goal is to minimize the amount of waste produced when technically and economically feasible and then reuse or recycle it. When this is not possible, we shall deposit it in a secure way to minimize adverse effects to people and the environment.

Tailings and bauxite residue
Tailings from bauxite extraction consist of mineral rejects from the extraction process mixed with water and flocculants. The tailings at Paragominas are stored in dedicated tailings dams, where the particles settle. Run-off water is collected in a separate water pond and reused. The water pond prevents overflow to the river during heavy precipitation. The run-off water is monitored, and the water quality meets the requirements set by the authorities.

In Paragominas, a new tailings system was completed in 2017. The new tailings dam is situated on a plateau where mining has been finalized. The old tailings system is constructed in a shallow valley. When tailings dams are closed, they need to settle for at least five years before being available for rehabilitation.

Bauxite residue, also known as red mud, is a by-product of the alumina refining process. Its disposal is challenging due to large volumes and the alkaline nature of the liquid component of the residue. The residue is washed with water to lower the alkalinity and to recover caustic soda for reuse.

Hydro uses an enhanced dry stacking technology for disposing of bauxite residue which allows for residue storage at steeper slopes, reducing the disposal area requirements. This reduces the relative environmental footprint. The new bauxite residue deposit area at Alunorte includes more advanced press filters. These are capable of reducing the residue moisture content to 22 percent, down from 36 percent achieved with the previous drum filters technology.

Tailings from bauxite production

Tailings production decreased significantly in 2018 due to the Paragominas curtailment.

Bauxite residue from alumina production

Bauxite residue production decreased significantly in 2018 due to the Alunorte embargo.

The dams and deposits are frequently inspected by Hydro and Brazilian authorities, and are also subject to inspection by e.g. Norwegian Geotechnical Institute (NGI) and Geomecanica. The last NGI visit to Paragominas and Alunorte took place in 2016 and resulted in an action plan to secure the long-term viability of the tailings dams and bauxite residue storage areas. Following Vale's Brumadinho accident in Brazil in January 2019, we are reviewing our tailings management system to ensure we can continue to operate safely. The tailings dams at Paragominas are built using mainly downstream elevation which provide high structural integrity and safety. At one dam, however, there is one section using centerline elevation. This section is part of the top elevation which is one meter high. The material stored in our dams is also of a much higher final solids content (55-60 percent). Hydro is closely monitoring and analyzing the impact on the industry, including potential regulatory, political and societal implications on the back of the Brumadinho incident. Safe operations in compliance with regulatory requirements is crucial for Hydro. The Paragominas dams are stable and regularly monitored and audited by external experts. The dams meet all parameters of current environmental and mining legislation.

Hydro is also a 5 percent shareholder in Mineração Rio do Norte (MRN)[12], where the tailings disposal process is designed to allow tailings to achieve a final solids content similar to that of Paragominas. MRN is the operator of the mine and is responsible for the management of its tailings system. Hydro works with MRN and the other shareholders through the board of directors and relevant technical committees to require the safe operation of MRN's tailings ponds in accordance with applicable laws and standards.

Hydro participates in international collaboration projects investigating possibilities to use bauxite residue as a resource. See the section Innovation and Design Thinking later in this report.

For more information about the Alunorte situation, see the corresponding section earlier in this report.

Other waste

Hydro's ambition is to reduce land-filling of total waste – excluding tailings and bauxite residue – by 60 percent within 2020 from a 2010 baseline. See note E5.3 to the environmental statements for further information.

Spent potlining (SPL), or anode waste, from the electrolysis cells used in primary aluminium production is defined as hazardous waste. The production of SPL varies with the relining of smelter cells, which is normally done every 4-7 years for established aluminium plants. New plants will get relining peaks at the same interval after start-up. For information about SPL production, see note E5.2 to the environmental statements.

Since 2012, some of the anode waste has been used by Norcem cement plant in Brevik, Norway (part of Heidelberg Cement). The carbon material from Hydro is being used as an alternative fuel in the production process, where high temperature incineration ensures safe treatment of hazardous components.

Hydro has an agreement with a refractory supplier to recycle part of the bricks coming from relining the anode baking furnace.

Qatalum delivers all first-cut SPL, which is the most energy-rich and contaminated part of the SPL, to its neighbor Qatar Steel, which uses it in production. In addition, Qatalum has

[12] Hydro has a five percent ownership interest and off-take agreements with Vale for a further 40 percent of the volume produced by MRN.

developed in cooperation with local cement plants a solution for co-processing of second-cut SPL.

Albras has a significant stock of SPL. This is being reduced according to the annual plan and target, and being delivered to the cement industry in Brazil. These agreements are examples of efficient resource use that is sound for the environment by substituting fuel or raw materials while reducing landfill and saving landfill costs.

Proper handling of SPL and other waste is a part of the planned rehabilitation work at Hydro's former aluminium plant in Kurri Kurri, Australia, where production ended in 2012.

Dross is a mixture of metallic aluminium, alloy components and metal oxides that is formed on the surface of liquid aluminium. Hydro's casthouses have treatment facilities to recover as much aluminium as possible from hot dross. The residual dross is sent to recover aluminium and reduce total waste. Several projects are in the pipeline that will reduce waste-to-landfill medium to long-term.

Following a mass balance of mercury at Alunorte in Brazil, which was concluded in 2017, Hydro decided to install four mercury condensers on the digestor lines. The first condenser was installed in 2018 as a pilot and, based on the technical performance, the remaining three will be installed and commissioned in 2020.

Product stewardship

Hydro engages in dialogue with customers and other stakeholders regarding the environmental impact of our processes and products. We perform life-cycle assessments (LCAs) for all major product groups to identify improvement potential. We also assess other aspects such as energy and material consumption, toxicity and recyclability.

Over the past two decades, Hydro and other aluminium companies have developed a pan-European network of national initiatives to promote and recycle aluminium packaging. Many of these national activities are emphasizing education and have developed projects with primary and secondary schools and universities to stimulate the next generation to make their contribution to a better environment.

Hydro is an active member of the Aluminium Stewardship Initiative and has started certification of its value chain, see page 265.

Integrity, human rights and community impact

As a global aluminium company with mining interests, ensuring responsible conduct in relation to society at large is important throughout Hydro's value chain. We have to consider our impact on society, spanning from construction to divestment activity, as well as the exposure to corruption and human rights violations, both within our own operations, the communities we are part of, and in the supply chain.

Our compliance system shall ensure that all persons acting on behalf of Hydro comply with applicable laws and regulations and with the requirements adopted by Hydro.

Some of the measures we pursue to ensure integrity and responsible behavior include:

- Zero tolerance of corruption in the private and public sector
- Ongoing human rights due diligence, including audits of joint ventures and suppliers
- Continuous stakeholder engagement linked to existing operations and new projects

Hydro’s corporate social responsibility (CSR) is built on the basis of making a positive difference by strengthening our business partners and the local communities where we operate. To do this, we target the fundamental drivers of long-term development. In line with stakeholder expectations and needs, and through strong partnerships, we aim to:

- Contribute to quality education in our communities
- Promote decent work throughout the value and supply chain
- Foster economic growth in our communities
- Strengthen local communities and institutions through capacity building on human rights and good governance

The construction of new plants, acquisitions and divestments as well as the closure of capacity are particularly important in respect to community impact. Hydro has a long tradition of responsible restructuring.

As a global company, we shall act in accordance with the applicable laws and regulations of the countries in which we operate. We interact with a variety of stakeholders, including our customers, competitors, suppliers, business partners, representatives, authorities and local communities, and we are committed to interact with all in an ethical and transparent manner, and strive to demonstrate integrity in everything we do.

We also systematically address other corporate responsibility issues in activities relating to business development, investment programs and project execution.

Mid-term strategic goals: Integrity, human rights and community impact

	Ambitions	Medium-term target	Timeframe	2019 Target	2018 Target	2018 progress	Status
Better	Maintain zero tolerance on corruption	No instance of corruption	Long-term	No instance of corruption	No instance of corruption	One registrered instance of corruption	●
					Revise Hydro's Code of Conduct	Completed	●
				Roll-out of revised Code of Conduct, including updated guidance documents within key topics	Finalization and full roll out of revised Hydro Integrity Program	Redefined concept, now consisting of several components partly rolled-out in 2018	●
Bigger							
Greener	Making a positive difference	Contribute to quality education and capacity building for 500.000	2030	Implement reporting methodology to track progress	Develop and test reporting system	On track	●
		Supplier development within HSE and human right issues	Long-term	Develop and test new solution to initiate and track improvements	Identifying improvement needs in existing supplier management systems	On track	●

Green light: Ambition on track and on target; *Amber light*: Ambition behind plan, but on target; *Red light*: Ambition might not meet the medium-term target

Ensuring a culture of compliance and integrity

Hydro's board-sanctioned Code of Conduct creates the foundation that supports our efforts to do the right things and to always act with integrity throughout our global organization wherever we operate and conduct business on behalf of Hydro. It requires adherence with laws and regulations as well as internal steering documents and is systematically implemented and followed up through our compliance system.

Our compliance system is based on a clear governance structure defining roles and responsibilities with regard to compliance and all compliance-related activities undertaken throughout the company.

The management of compliance risks, including risks related to corruption and human rights violations, are integrated in our business planning, enterprise risk management and follow-up process, including relevant risk-mitigating actions and key performance indicators. The progress of actions as well as any non-compliance matters is addressed in the quarterly performance review meetings that each business area has with the CEO, and an annual compliance report is submitted to the board of directors. The head of corporate compliance reports to the board of directors through the board audit committee at her own discretion. She meets with the board of directors periodically and participates in all board audit committee meetings.

Combating corruption and respecting human rights are integral to our supplier requirements, see page 89. Procedures are in place relating to assessing the integrity risk of business partners and detecting fraud. Regular transaction-based screening of customers and suppliers is also carried out, see note S10.5 to the social statements. In 2018, Extruded Solutions implemented enhanced business partner screenings to ensure integration with Hydro standards and processes. In 2019, Hydro will re-assess the risk criteria and process for business partner integrity risk management, with the aim to simplify and enhance our risk-based approach.

Starting in 2019, an integrity index will be embedded in Hydro's employee engagement survey. The index will benchmark the employee perception of our integrity culture. It will also aim to identify weaknesses and provide us with a good basis for specific and tailored compliance activities going forward.

In addition, we will strengthen sanctions and trade compliance awareness by e-learning and tailor-made classroom training for exposed functions, implementing Hydro's enhanced sanctions and trade compliance framework established during the end of 2018.

Hydro's global data protection procedure, constituting the company's binding corporate rules for data protection and ensuring compliance with the EU General Data Protection Regulation (GDPR), was approved by the relevant EU data protection authorities on May 16, 2018. In 2018, we performed training, developed detailed standard operating procedures and established risk matrices for data privacy. After the GDPR entered into force in May 2018, we continued to further operationalize internal data protection procedures. Increased attention has also been given to the strengthening of the organization of Hydro's data protection work, with a specific emphasis on clarifying roles and responsibilities.

We are committed to building a culture of trust where employees are comfortable to ask questions, seek guidance, raise concerns, and report suspected violations. Normally, concerns and complaints should be raised with the employee's superior. However, if the employee is uncomfortable with that, he or she may raise the issue with human resources, HSE, a union/safety representative, compliance, legal or internal audit. The employee can also use Hydro's whistle-blower channel, AlertLine, where concerns can be reported anonymously. All employees and on-site contractors can use the AlertLine in their own language at all times via toll-free phone numbers, Hydro's intranet or through a dedicated address on the internet. In certain countries, e.g. Spain, there are, however, legal restrictions on such reporting lines.

All cases reported through the AlertLine were investigated. In total 14 persons were dismissed as a result of reported breaches of Hydro policy in 2018. This includes one person related to a case of confirmed corruption, please see note S10.1 for more information.

The head of internal audit reports to the company's board of directors through the board audit committee. Every quarter, she informs the board audit committee and periodically the corporate management board about matters reported through the AlertLine. Hydro's internal audit has resources both in Norway and Brazil.

For more information about Hydro's performance on compliance, see note S10 to the Viability performance statements in this report. For information about alterations of certain test records in former Sapa, please see page 128.

Transparency

Transparency is key to creating a global level playing field as well as to safeguarde the company's reputation. Hydro supports the Extractive Industries Transparency Initiative (EITI) and, since 2005, we have reported payments to host governments related to exploration and extraction activities for bauxite. We also comply with the Norwegian legal requirements on country-by-country reporting, see page 276. The report has been approved by Hydro's board of directors. In accordance with the UK Modern Slavery Act, we publish a transparency statement which is also approved by the board of directors, see page 297. See the Appendices to the Board of Directors report. We also follow the Oslo Børs' guidance on the reporting of corporate responsibility.

Hydro is a long-standing corporate member of Transparency International (TI) Norway and participates regularly in seminars with TI and by providing content to TI publications.

Respecting human rights

As an employer, owner and purchaser, an important contribution toward respecting human rights is to secure decent working conditions in our organization, in minority-owned companies and with our suppliers. Information pertaining to Hydro's human rights policies and compliance is regularly communicated to the board of directors, the Corporate Management Board, business area management teams, and relevant parties such as union representatives.

We do not tolerate any form of harassment or discrimination, including but not limited to gender, race, color, religion, political views, union affiliation, ethnic background, disability, sexual orientation or marital status. Hydro also supports key frameworks that define human rights principles and is committed to following these, including the UN Guiding Principles on Business and Human Rights. For a full overview, see GRI Standards general disclosure 102-12 and 102-13 at www.hydro.com/gri

8 DECENT WORK AND ECONOMIC GROWTH

In 2017, the Danish Institute for Human Rights (DIHR) performed a comprehensive mapping of Hydro's human rights risks (excluding Extruded Solutions). The mapping covered all countries in which Hydro operates, excluding Extruded Solutions. In 2018, The Global Child Forum published a report on Hydro's efforts to respect and support children's rights in the state of Pará, Brazil. The report gives an overview of how Hydro has approached the challenges in the region based on the Children's Rights and Business Principles. The reports are publicly available A full human rights due diligence for the Alunorte refinery and the Paragominas mine in Pará, Brazil, is planned performed in 2019.

An example of how we work with alleged human rights breaches is from our supply chain. We have been in dialogue with a metal supplier, based on alleged human rights breaches, to perform CSR and HSE audits throughout their value chain. As we have been denied access to certain parts, we will terminate the contract, unless the supplier alters the decision.

Hydro has significant operations in Barcarena, Brazil, including the Alunorte alumina refinery and Albras aluminium plant. Local social conditions are challenging with high levels of unemployment and general poverty. For more information about the Alunorte situation, please see the separate section earlier in this report.

Hydro supports ILO's eight core conventions and reports according to the UK Modern Slavery Act, see the Appendices to Board of Directors report.

Vulnerable individuals and groups

We are committed to the principles of non-discrimination and to respecting the rights of vulnerable individuals and groups. Since 2011, Hydro has been the owner of the 244-km-long Paragominas bauxite pipeline that crosses areas inhabited by traditional Quilombola groups in the Jambuaçu Territory in Pará, Brazil.

Unresolved issues remain related to identifying individuals directly impacted by the construction of the pipeline. These relate in particular to a 15-km stretch that crosses Quilombola territory. There are compensatory and mitigating measures which could have consequences for Hydro's mining operation in Paragominas going forward. These issues relate back to the time before Hydro became owner, and the former owner of the pipeline is still the legal party. Hydro maintains its relations with Quilombola representatives through dedicated staff and is cooperating with Fundação Cultural Palmares, the Brazilian agency in charge of Quilombolas affairs, to foster the dialogue and establish a positive agenda within the Quilombola territory. We are also working with local projects and are engaged in education for the Quilombola communities affected by the pipeline.

In Barcarena, also in Pará, in an area surrounding Hydro's operations and regulated for industrial purposes, illegal logging and settlements have accelerated since 2016. Neither the authorities nor Hydro want settlement in the area.

In the municipality of Oriximina in Pará, Brazil, where the MRN[13] bauxite mine is located, there is an ongoing dispute between Quilombola communities and Brazilian authorities regarding title to land owned by the federal government. The territory claimed by these communities encompasses certain areas that are planned to be mined by MRN in the future, but MRN is not a party in this conflict.

Concerns have been raised about indigenous and tribal peoples' rights during the consultation processes for the mine expansion. Hydro, through MRN's board of directors, engages in the scope of the planned environmental and social impact assessment (ESIA) and Quilombola consultation processes for the expansion project to require adherence to local, national and international standards. Local NGOs have also raised concerns regarding the impacts of MRN's operations on local communities, particularly those close to the Trombetas Port. MRN is currently engaged in understanding and responding to the stakeholder's expectations.

In Canada, Hydro's part-owned Alouette smelter is in regular dialogue with representatives of the Innu First Nation community in its vicinity. Alouette is also promoting and hiring Innu employees.

Grievance mechanisms

Grievance mechanisms are important to protect the rights of individuals and groups affected by our operations. At many sites, such mechanisms are available to all local stakeholders.

Channels for submitting grievances may vary depending on local needs. In Brazil, the system has several channels, including a phone number, email and dedicated, specially trained field workers. Third-party grievances may be of any kind, including social and environmental issues. We are using various means to make the mechanism better known to our neighbors, including newsletters, a website and open meetings.

Responsible sourcing

Hydro has more than 30,000 active suppliers globally. Most are located in the same countries as our production facilities.

8 DECENT WORK AND ECONOMIC GROWTH

Hydro's supplier requirements regarding corporate responsibility are, as stated in our global directives and procedures, an integral part of all stages of the procurement process. The requirements cover issues related to environment, human rights, anti-corruption and working conditions, including work environment.

The principles laid down in Hydro's Supplier Code of Conduct are made binding through contractual clauses. The requirements demand the supplier to comply with all applicable laws and regulations relating to corruption and bribery, human rights and working conditions and environment to ensure that Hydro's business relationships reflect the values and principles that Hydro promotes internally and externally. The contracts shall include clauses regarding auditing rights and the supplier's responsibility to actively promote the principles set out in Hydro's Supplier Code of Conduct with its own suppliers/contractors and subsuppliers/subcontractors of any tier that have a material contribution to the supply of goods and services to Hydro under the contract.

In 2018, Extruded Solutions rolled out the Supplier Code of Conduct to most new suppliers and made it an integral part of the global terms and conditions of purchase which are part of most purchase order.

Hydro's procedure for integrity risk management of business partners includes suppliers and customers, strategic partners and intermediaries/agents and sets requirements for integrity due diligence. Implementation is risk-based and takes into consideration contractual value, country risk, etc. With a few exceptions, business partners to Hydro shall be risk-assessed prior to entering into a new contract or renewing an existing contract.

[13] Hydro has a 5 percent ownership interest and off-take agreements with Vale for a further 40 percent of the volume produced by MRN.

Suppliers, customers and other business partners registered in our main accounting systems (except Extruded Solutions) are screened on a weekly basis against recognized international sanction lists. Extruded Solutions has implemented the Integrity Risk Management process for a majority of its suppliers in 2018. Regular sanctions screening will start in 2019. Furthermore, supplier audits and site visits are performed by Hydro personnel and external auditors based on risk analysis.

The risk of incidents of child labor abuse, compulsory or forced labor in our supply chain is low in the majority of Hydro's business areas. We do, however, recognize a risk of forced or compulsory labor among suppliers in the Middle East, South America and Asia. This is followed up through supplier audits, etc.

Hydro is a founding member of the Aluminium Stewardship Initiative (ASI). See page 265 for more information.

Hydro's supply chain

The figure shows Hydro's supply chain related to its value chain, and does not reflect the current organizational structure.

New projects and other portfolio changes

When planning new projects, we map the environmental and social impact when relevant. Our analysis follows the Equator Principles, and thus reflects the requirements of the World Bank and the International Finance Corporation regarding information, consultation and investigation of the project's environmental and social impact, including human rights, as well as an action plan and proposed initiatives. Dialogue with affected groups gives input to plans, detailing our environmental and social responsibilities. We strive to act in an open and credible manner, and gather views from interested parties, aiming for a common understanding of the decisions that are made.

The Karmøy pilot project reached full production in June 2018. See also page 13.

Two of Hydro's aluminium plants have been running on reduced capacity since 2009. In September 2018, Hydro made the final build decision to upgrade and restart the second production line at the aluminium plant in Husnes, Norway, creating 90 more jobs. The plant in Neuss, Germany, is still running at reduced capacity. In addition, improvement and cost-reduction programs are running in all business areas and corporate staffs, see also page 13.

At the the new line for aluminium car body sheet in Grevenbroich, Germany, most of the issues leading to the delays in the ramp-up have been solved and good progress has been made with product qualification. With the new line Rolled Products have 200,000 mt nominal automotive body-in-white capacity. The ramp-up of a new production line for recycling of low-grade used beverage cans in Neuss, Germany, has been further delayed, see page 82 for more information.

Hydro's acquisition of Arconic's two extrusion plants in Brazil, with more than 600 employees, was completed in April 2018. The acquisition process for Rio Tinto's Icelandic aluminium plant ISAL was ended in September 2018. Hydro will continue to own 46.7 percent in the related company Aluchemie.

For information about the Alunorte embargo and curtailment at Albras and Paragominas, see the separate section "The Alunorte situation" earlier in this report.

Dialogue with affected parties

Our dialogue and engagement with relevant parties is based on extensive stakeholder mapping. It covers a large number of stakeholders and individuals, such as unions, works councils, customers, suppliers, business partners, local authorities, non-governmental organizations and affected communities including vulnerable groups. Such engagement is based on rights established by legislation or international conventions as well as our values, experiences and participation in the local community. We will consult with interested and affected parties in the identification, assessment and management of all significant social, health, safety, environmental and economic impacts associated with our activities. Before major developments or large expansions are undertaken, it is a requirement to conduct an impact assessment, in line with internationally accepted standards such as IFC and UN Guiding Principles on Business and Human Rights. This includes the principle of free, prior and informed consent when indigenous peoples are involved.

Dialogue with the employees' representatives includes involvement at an early stage in all major processes affecting employees, and we have a tradition for open and successful collaboration between management and unions.

All business areas have a forum for dialogue between the management and union representatives. Hydro's Global Framework Agreement was last updated in 2016 and has been extended through the end of 2019.

For the situation at Alunorte, please see the separate section earlier in this report.

Stakeholder dialogue in Hydro

- Academia
- Authorities
- Industry associations
- Lobby groups
- Local communities
- Media
- National and international unions
- NGOs
- Politicians
- Public offices
- R&D funding bodies

- Commodity and stock exchanges
- Competitors
- Customers
- End users
- Insurers and banks
- Partners/joint ventures
- Suppliers
- Other business relations

- Board of Directors
- Corporate Assembly
- Employee representatives
- Employees

- Owners/shareholders
- The Norwegian government
- Financial markets
- Analysts
- Traders
- Brokers
- Ratings agencies

Partnerships

Hydro works through industry and aluminium associations to establish a level playing field for global aluminium production. We support the development of international frameworks on climate change and greenhouse gas emissions and participate actively in organizations such as the World Business Council for Sustainable Development (WBCSD) and the International Emissions Trading Association, to provide business solutions to the climate change challenge. In addition, we engage actively in initiatives fostering increased recycling and material stewardship and are a member of the Aluminium Stewardship Initiative.

The ongoing loss of biodiversity and degradation of ecosystems represent long-term risks for the industry and society at large. We see a need for more sustainable frameworks and participate in several initiatives, including the WBCSD's Ecosystem Program. Hydro is a member of the International Council on Mining and Metals (ICMM), which gives us the opportunity to participate in the development of industry practices on the environment and to share best practices.

To increase our knowledge and secure a science-based approach to rehabilitation, the Biodiversity Research Consortium Brazil-Norway (BRC) was established in 2013. BRC consists of the University of Oslo and its Brazilian partners Museu Paraense Emílio Goeldi, Federal University of Pará and Federal Rural University of the Amazon, in addition to Hydro. The scope of the consortium is to create a research program connected to our mining operations. The aim is to strengthen Hydro's ability to preserve natural biodiversity and to better rehabilitate the areas where we mine bauxite. Thirteen research projects are progressing, while more projects are in the pipeline.

To join forces in collective action is critical in the fight against corruption. Hydro has had a partnership with Transparency International for many years. Hydro is also a member of the Maritime Anti-Corruption Network (MACN), which provides valuable insight into the maritime industry - an important part of our supply chain. In 2018, Hydro through Alunorte, Albras, Mineração Paragominas and Norsk Hydro Brazil, became signatory of the Business Pact for Integrity and Against Corruption. The Pact is developed by the Ethos Institute in partnership with global organizations such as the United Nations and the World Economic Forum, seeking to unite companies with the objective of promoting a more ethical market and to eradicate bribery and corruption in Brazil. Hydro is also a signatory to the World Economic Forum's Partnering Against Corruption Initiative (PACI).

Hydro has long-standing partnerships with Amnesty International Norway and Save the Children Norway. We have also collaborated with the Danish Institute for Human Rights since 2011.

In addition, we cooperate with global and local industry organizations, NGOs and other organizations. See www.hydro.com for an overview of important partnerships. For information about how we collaborate with other institutions within R&D, please see the section Innovation and Design Thinking later in this report.

Public affairs and lobbying

Given the nature of our industry, Hydro is particularly involved in policies dealing with climate change, recycling, viable production and consumption, trade, energy efficiency, energy markets and infrastructure, health and safety in the workplace, competition and other framework conditions pertaining to our industry.

Hydro recognizes the value of engaging with public authorities and other stakeholders in relation to the development of various policy initiatives that impact our industry. We interact primarily with decision makers in countries in which we have significant operations, such as Norway, Germany and Brazil, as well as with regional structures like the European Union institutions. These interactions are mainly related to securing favorable, stable and predictable industry framework conditions, taxes and legislation that might have considerable consequences for our activities.

Hydro promotes its views on issues of importance either through direct interaction with public authorities and other stakeholders, or through various industry associations. These include the International Aluminium Institute, Eurometaux, European Aluminium, the Brazilian Aluminium Association, the U.S. Aluminum Association, the International Council on Mining and Metals, the World Business Council for Sustainable Development, the Federation of Norwegian Industry, and more, see GRI Standards 102-12 and 102-13 at www.hydro.com/gri

Hydro also participates in a series of think tanks, especially in Brussels, and engages regularly in discussions with various NGOs.

Most resources are dedicated to advocacy activities, within the EU, Brazil, USA and Norway, through business associations, and direct dialogue with authorities and decision makers. Among concrete activities in 2018 was follow-up of the implementation of the new ETS Directive, review of the state aid guidelines for indirect cost compensation, EU's process on updating its energy and climate policy framework and the long-term emission reduction strategy. In Germany, our activities relate to the Commission on Growth, Structural Change and Employment preparation of a roadmap for the phase-out of coal. In Brazil we follow-up of the regulatory framework on ICMS tax in the state of Pará, see page 69. Following the embargos imposed on Alunorte in 2018, Hydro has actively worked with Brazilian authorities to resume normal operations at the alumina refinery. For more information, please see The Alunorte situation section earlier in this report.

Hydro has continued a close follow-up the impact of the trade sanctions launched by the Trump administration. These include the Section 232 for investigation into whether aluminium import impairs US national security, sanctions on RUSAL and the Section 301 investigation of China's acts, policies and practices related to technology transfer, intellectual property and innovation.

Hydro supports the principles of free trade and open market, and efforts to create a global level playing field. In addition, in our advocacy we support the climate targets set in the Paris Agreement.

For information on spending on public affairs and lobbying, see note S12 to the Viability performance statements in this report.

According to our Code of Conduct, Hydro may not make financial contributions to political parties.

Community investments and social programs

A key element in Hydro's CSR strategy is to strengthen the positive impact on the societies and communities where we operate. The way we do this differs from country to country and from community to community. The main contribution is generated from our operations through production and purchase of goods and services, direct and indirect job creation, and tax payments. We engage in capacity building through targeted programs, and we have partnerships aiming to further enhance the public's knowledge about Hydro and its operations. Hydro has corporate requirements on management of community investments, charitable donations and sponsorships.

In 2018, we launched the strategic target to contribute to quality education and capacity building for 500,000 people in our communities and for business partners from 2018 until end of 2030.

Some of our community programs are based in mining license requirements, while others are voluntary commitments. In Brazil, all major programs have been evaluated to maximize outcomes and impact for the targeted stakeholders. This evaluation has led to restructuring of some programs, while others have been, or will be, phased out. Examples of programs include two programs in Barcarena in Brazil: Amesa, that aims to bring together local family farmers with private actors that purchase and need products from local farms, and EmBarca, that seeks to strengthen local youth to be socio-environmental entrepreneurs in their own communities.

The program offering internships and apprenticeships to refugees at Hydro's Rolled Products operations in Germany continued in 2018 with six participants. Extruded Solutions in Tønder, Denmark, has a similar program.

Local activities at Hydro sites around the world typically include children's education and related sports activities, culture and assistance to children in need. Our partnerships also include support of the Nobel Peace Center in Oslo, and Save the Children Norway as well as agreements with e.g.

Amnesty International Norway, Danish Institute for Human Rights, Transparency International Norway and World Wildlife Foundation Norway.

Another important contribution is the transfer of competence that takes place through our cooperation with universities and research institutions. This includes the cooperation with three academic institutions in Pará, Brazil, and the University of Oslo through the Biodiversity Research Consortium Brazil-Norway. See page 83 for more information. In addition, we provide scholarships to selected PhD candidates doing research relevant for our business areas. Hydro is also sponsoring professorships in Norway and Qatar and has several adjunct professors among its own employees. See also page 101 for further information.

Extruded Solutions has a broad range of sponsorships and support programs based on local needs. These activities are not yet included in Hydro's reporting.

For information related to the Alunorte situation, please see the separate section earlier in this report.

Community investments, charitable donations and sponsorships

Around 35 million NOK relates to emergency relief following the extreme rainfall and subsequent flooding of Barcarena in 2018. Around 10 million NOK relates to food cards as part of the TAC agreement.

Organization and work environment

Hydro’s safety performance deteriorated further in 2018, and we experienced one fatal accident. The development is concerning. Our combined total recordable injury (TRI) rate, including employees and contractor employees, increased to 3.4 from 2.9 in 2017. Our target was 2.4. Still, the high-risk incidents rate improved.

Through the Sapa acquisition in 2017, the number of permanent employees in Hydro grew from about 13,000 to 35,000 and reached 36,236 at the end of 2018. The integration of Extruded Solutions is continuing and includes implementation of Hydro's common people processes.

Effective organization

In order to deliver on our strategic goals and remain competitive, Hydro needs leaders and specialists with the right competence. We are dedicated to attracting, developing and retaining competence to ensure our future success. After an update of Hydro's people strategy in 2016, we continued to reinforce some existing processes and implement some new. Extruded Solutions has also started implementation of Hydro's common process for people performance and development. We initiated the development of a global framework for competence management. This work will continue in 2019.

Our global employee engagement survey Hydro Monitor is normally run every second year. The last survey took place in 2018 and reached the top 10 percent according to the IBM External Norm on the Employee Engagement Index. The survey did not include the business area Extruded Solutions, which will be included in Hydro Monitor 2019. Maintaining employee engagement is a key priority going forward. All units have action plans based on their results.

Number of employees

The increase in employees in 2017 followed the acquisition of Sapa.

Developing and retaining the right competence

Hydro's common process for people performance and development, My Way, includes an appraisal dialogue, individual development plan and follow up, as well as talent planning and succession management. In 2018, all employees[14] except those who work in manufacturing operations in Extruded Solutions were invited to take part and 96 percent participated. While some plants have paper-based appraisal dialogues also for employees who work in manufacturing roles, we will not be able to roll out My Way throughout the entire company until 2021 at the earliest, when a new system will be available to all employees.

Our philosophy is that 70 percent of competence building is direct on-the-job training, while 20 percent is acquired via networking and mentoring and 10 percent via traditional training. Hydro Academy is our platform for learning and development for employees. It is also the umbrella for all other faculties and academies in Hydro such as the business systems, HSE, compliance, digitalization and leadership. One important goal of Hydro Academy is to make training more visible and easily accessible to leaders and employees. This includes an overview of available training and of the training modules that each employee has completed or should complete. Extruded Solutions has started implementation of Hydro Academy for its office and administrative workers.

We offer new employees introductory training related to the organization and to their individual work tasks. This includes required knowledge within health, security, safety and environment. The most important development takes place locally, primarily with on-the-job training. A special training course, Hydro Fundamentals, targets leaders and specialists, giving them insight into Hydro's history, values, diversity, competitive landscape and businesses. A digital version is under development to significantly extend the reach of Hydro Fundamentals.

In order to have a healthy pipeline of leaders with the required breadth of experience, we strive to rotate employees early in their careers so that they gain skills from different parts of the organization. Through the succession and career sections of My Way, we work with the leadership and specialist pipeline and identify required development. We have a portfolio of development programs that supports on-the-job development for leaders and specialists.

Hydro Monitor

Hydro Monitor did not include employees from Extruded Solutions in 2018. A new Hydro Monitor will be performed for all employees in 2019.

Mid-term strategic goals Organization and work environment

	Ambitions	Medium-term target	Timeframe	2019 Target	2018 Target	2018 progress	Status
Better	Improve safety performance, strive for injury free environment	TRI <2[1)]	2020	TRI < 2.7	TRI < 3.0	One fatality TRI 3.4	●
	Hydro scores in the top 25 percent on the Employee Engangement index in Hydro Monitor	Top 25 percent[2)]	2020	Top 25 percent	Top 25 percent	Top 25 percent	●
	All employees participate in the people performance and development process My Way	90 percent[3)]	2020	92 percent	95 percent[4)]	96 percent	●
Bigger							
Greener							

1) TRI, total recordable injuries per million hours worked, includes own employees and contractors
2) Currently 78% according to the external norm
3) Excluding Extruded Solutions in 2018
4) The target for Extruded Solutions was 75 percent except for those who work in manufacturing operations

Green light: Ambition on track and on target; *Amber light*: Ambition behind plan, but on target; *Red light*: Ambition might not meet the medium-term target

[14] Excludes employees on leave and those being employed after the main part of My Way is performed.

Diversity and inclusion

Hydro's organization around the world represents significant diversity in education, experience, gender, age and cultural background. We see this diversity as a source of competitive advantage, as it encourages innovation, learning and better customer understanding. Through diversity and inclusion, we want all employees to know they are valued for their differences and that they contribute to the success of our business strategy.

Share of non-Norwegian leaders

Share of women leaders

The total share of women at all levels in Hydro was 18 percent in 2018.

In 2018, we updated the ambition to increase diversity and accommodate an inclusive work environment. The new ambition is better suited to our business needs with an integrated Extruded Solutions. Since 2017, each business area has identified priorities and is in the process of delivering on targets. Gender equality continues to be a main area for Hydro. In addition, each business area has chosen at least one diversity area in which to improve, either culture, competence, or disability. Our HR processes are also used in advancing diversity and inclusion. Through corporate programs, leaders and specialists are trained in how to better manage and take advantage of diverse teams. We emphasize participant diversity in the programs.

We are continually adjusting working conditions so that all employees have the same opportunities in their workplace. In Brazil, we are required to employ at least 5 percent disabled people. Paragominas employed 4.9 percent disabled people by the end of 2018, and Alunorte were at 4.7 percent at the end of 2018, while the level at Albras was 3.5 percent. Just as important as achieving the legal requirements, Alunorte, Paragominas and Norsk Hydro Brasil are working on the career development of employees with disabilities.

Compensation

All employees shall receive a total compensation that is competitive and aligned with the local industry standard (but not market-leading). Relevant qualifications, such as performance, education, experience and professional criteria, shall be considered when providing training, settling compensation and awarding promotions.

The annual bonus of Hydro executives shall reflect achievements in relation to pre-defined financial targets and achievements of operational and organizational key performance indicators (KPIs). Targets relating to safety, environment, corporate social responsibility, compliance and leadership expectations constitute a substantial part of the annual bonus plan. Please see note 8 and 9 to the consolidated financial statements for more information.

To learn about gender-related salary differences, see note S2.1 to the social statements.

Occupational health and safety

Hydro shall be a leading company in our industry in the area of occupational health and safety. This will be achieved through consistent implementation of the management system, with committed and visible leadership, and full engagement of all employees.

Our business-planning process is used to ensure continuous improvement throughout the organization with progress on key performance indicators reported monthly.

Our ambition is to prevent all injuries and ill health to avoid human suffering and we will work continually to avoid damage to property and loss of production.

The negative development in safety performance in 2018 was concerning. An employee lost his life in a crushing accident at our extrusion plant in Hungary, and we had an increase in the number of recordable injuries. The fatality was thoroughly investigated with corrective actions taken locally, and lessons learned communicated and acted upon globally.

All business areas are active in identifying risks, and our performance indicator related to risk is important in helping monitor and manage processes and tasks with high inherent risks. The high-risk incidents rate, which is a leading indicator, improved in 2018.

In 2019, we will deploy fatality prevention protocols and associated life-saving rules and behaviors across all business areas. We will also identify and share best practices more

effectively through a revised HSE auditing process and use of digital tools. See also note S5.1.

High risk incidents

Per million hours worked (employees anc contractors combined)

Total recordable injuries

Per million hours worked

Fatal accidents

Number

Hydro experienced one fatal accident in 2018.

In addition, we are strengthening our behavioral tools using human performance techniques and the deployment of the safety culture program “green zones” at all sites.

Existing health and well-being programs are being expanded including psychosocial risk. The Hydro Monitor will be further developed to provide feedback to our HSE initiatives.

Since 2012, the CEO HSE Committee has been the strategic decision-making committee for all main HSE-related matters in Hydro. The committee is led by President & CEO Svein Richard Brandtzæg and consists of the members of the Corporate Management Board.

Security and emergency preparedness

Increased exposure in risk-filled areas and the global volatile risk picture in general, has made us intensify our preventive efforts. We are committed to the protection of people, environment, physical assets, data and information, anticipating and preparing for potentially adverse incidents with crisis potential in order to maintain business and operational continuity.

To prepare for and respond to intentional, unintentional and/or naturally caused disasters, and to protect people and critical assets, we adapt and initiate security measures depending on the evolving risk picture.

Security guards are employed on a regular basis to protect our personnel and assets. No armed guards were engaged in our activities in 2018, and there were no significant incidents reported in connection with the use of security guards. Hydro is committed to the Voluntary Principles on Security and Human Rights.

Hydro is responsible for infrastructure and functions on local and regional levels that might be critical to society's operability, and we operate large-scale production sites where a crisis could influence community interests and safety in general. Hence, we are subject to control and follow-up by relevant national authorities. We have emergency plans in place at the plant and business area level, and we train with these regularly. Lessons identified indicate that a standardized approach to emergency planning, more closely linked to risk mapping, will improve our ability to deal with emergency situations. In 2019, we will carry out emergency and crisis management workshops to help link the process of emergency preparedness, crisis management, response and recovery from the plant through to business area level and above.

Secure information handling is important to ensure Hydro's business continuity and reputation. Crucial computer systems are subject to surveillance and regulations. All personnel with access to sensitive information are bound to secrecy, and required to handle information according to corporate guidelines and requirements.

Hydro’s IS/IT infrastructure is a critical element in all parts of our operations, covering areas such as process control systems at production sites, central personnel databases and systems for external reporting. Cyber crime is increasing globally, and Hydro is exposed to threats to the integrity,

availability and confidentiality of our systems. Threats may include attempts to access information, computer viruses, denial of service and other electronic security breaches.

Hydro has launched several initiatives to increase the robustness of its IS/IT infrastructure toward malicious attacks by improving system infrastructure and by educating employees to develop and improve secure work processes and routines, and to understand how these threats can be brought to bear.

Employees are safeguarded through systems for travel planning, risk assessment and emergency preparedness. Our ability to respond quickly to incidents worldwide has increased through risk monitoring, incident-monitoring tools and a continuous development of competence.

Innovation and design thinking

We believe that the key to Hydro's 113-year-long stretch of industrial progress is the combination of production and innovation, where research and development have gone hand-in-hand with full-scale production.

Our R&D efforts are concentrated on:
- Making products that promote the use of aluminium and sustainable development
- Developing the world's best electrolysis technology
- Using R&D and technology to ensure optimal operations in existing assets, including cost and HSE
- Ensuring optimal operations in existing assets, including cost and HSE
- Developing recycling technology
- Increasing the share of value-added products and tailored solutions for the customer
- Utilizing the opportunities of Industry 4.0 to improve process stability, productivity, cost and safety

In our industry, we must start developing today the technology we will be using in 10 or 20 years. This includes smelter technology, new aluminium alloys with special properties, lighter transportation, better packaging to reduce cooling needs and food spoilage, and aluminium façades that lead to lower operating costs and enable buildings to generate as much energy as they use during operation. At the same time, our downstream activities are continuously developing new solutions, together with customers. More and more, this collaboration reflects design thinking, bridging the gap from idea to solution.

Hydro's Technology Board consists of the members of Hydro's Corporate Management Board. The group meets every quarter to understand and discuss innovations in the business areas, including their value to the company. Innovations include the changes achieved through our continuous improvement work on all organizational levels.

Business areas are responsible for their own technology development and for the execution of their respective technology strategies. A corporate technology office shall ensure a holistic and long-term approach to Hydro's technology strategy and agenda. Hydro's Chief Technology Officer (CTO), reports directly to the CEO, to strengthen technology leadership. The CTO leads an internal R&D network with representatives from the business areas, and supports the Hydro Technology Board in developing overall research and technology priorities and strategies.

The greater part of our R&D expenses goes to our in-house research and application development organization, while the remainder supports work carried out at external institutions. Our main R&D centers are in Årdal (smelter technology) and Sunndal (alloys and casting) in Norway, Bonn in Germany (Rolled Products), and Finspång in Sweden and Detroit in the USA (Extruded Solutions). A significant research and development department for bauxite and alumina has been built at Alunorte in Barcarena, Brazil.

R&D Expenses

Received funding in 2018 accumulated to NOK 35 million. In addition comes NOK 311 million related to Enova's support to the Karmøy Technology Pilot.

A major advantage for Hydro from an innovation perspective is our broad knowledge and control of the entire value chain from bauxite mining, alumina refining, electrolysis of primary aluminium and alloy technology to finished products and recycling.

Our aluminium plants in Sunndal (Norway) and Qatalum (Qatar) utilize HAL 300 technology. Hydro developed this technology, which features energy consumption of around 13.5 kWh/kg compared to a global industry average of about 14 kWh/kg.

Our 75,000-metric-ton-per-year technology pilot, with the aim of full-scale industrial testing of our proprietary HAL4e technology, started production at Karmøy, Norway, in January 2018 and reached full production in June 2018. The total cost of the project was NOK 4.3 billion. Enova, a Norwegian public enterprise supporting new energy and climate-related technology, contributed NOK 1.6 billion toward the total cost. Although still in a qualification phase, the Karmøy Technology Pilot is producing the world's most climate and energy-efficient primary aluminium.

The technology pilot consists of 60 production cells. Forty-eight cells use HAL4e technology, where the target is to operate with energy consumption of 12.3 kWh per kg produced aluminium. The other 12 cells use HAL4e Ultra technology, and aim to operate at 11.5-11.8 kWh/kg. The pilot is still in a phase where heat balance and tuning of operations are performed and energy targets will not be validated until 2019. Total direct and indirect emissions are expected to be 1.4 kg CO2 equivalents/kg aluminium, which is more than 30 percent lower than the world average of 2.1. An important rationale for the technology pilot is to validate the new physical and control system-related elements. This may enable Hydro to implement the new spin-off technology elements - faster, cheaper and with lower risk – at its other primary aluminium plants to improve performance and financial robustness.

Bauxite residue (also known as red mud) is a challenge in our industry due to its alkalinity and large volumes. Hydro participates in international collaboration projects investigating possibilities to use bauxite residue as a resource. An important example is together with the Norwegian University of Technology and Science (NTNU), Sintef, Norcem/Heidelberg and Veidekke to develop a new type of concrete using bauxite residue as a resource to improve quality. We are also working with other aluminium companies through the International Aluminium Institute to solve this industry challenge. In addition, we are investing in R&D to reduce the total alkalinity of the bauxite residue.

Mid-term strategic goals Innovation

	Ambitions	Medium-term target	Timeframe	2019 Target	2018 Target	2018 progress	Status
Better	Extend technology lead with Karmøy technology pilot	Full ramp-up	Q2 2018			Jun 27, 2018	●
	Differentiate through product innovation, quality and service	min. 1 step change/yr	Annually	1 step change	1 step change	Advanced alloys for superplastic forming	●
Bigger	Realize technology-driven smelter capacity creep	200,000 mt/y	2025	55,000 mt/yr[1) 2)]	43,000 mt/yr[2)]	35,000 mt[2)]	●
Greener	Continuously reduced specific GHG emissions/mt from electrolysis	EU benchmark	Long-term	1.57	1.57	1.60	●
	Increase recycling of post-consumer scrap	>250,000 mt/yr	2020	195,000 mt/yr[3)]	183,000 mt/yr	161,000 mt/yr	●

1) Original target of 150,000 mt/yr will not be met by 2020
2) Excludes Albras
3) Original target of 250,000 mt/yr will not be met by 2020

Green light: Ambition on track and on target; *Amber light*: Ambition behind plan, but on target; *Red light*: Ambition might not meet the medium-term target

Aluminium in automotive

The growing use of aluminium in the automotive industry is being driven by emissions regulations and passenger safety requirements. Aluminium is well-suited for all cars, from petrol-powered automobiles to fully electric vehicles and vehicles which use hydrogen fuel cell technology. This is creating new opportunities for Hydro.

Aluminium has inherent suitable forming and functional properties, it is lighter than competing materials and its energy-absorption properties can increase safety. Applications include extruded aluminium frames and sub-frames, body-in white components, and sheet for hang on parts such as car doors and hoods.

Hydro is a large supplier to the automotive industry. Customers include major producers in Europe, North America and Asia.

In 2018, Hydro introduced a high-performing aluminium alloy (HHS 400) for automotive applications that require high-strength aluminium solutions. The development of HHS 400 was based on our material research work.

We also extended our business relationship with Ford Motor Company in 2018 after winning a contract to deliver an aluminium solution that reduces the suspension weight on a new car that Ford is developing. The finished aluminium component, which is replacing steel, requires value-adding operations such as precision cutting, CNC machining and the insertion of special bushings.

High level of expertise

An important part of Hydro's technology strategy is to utilize our researchers, operators and other experts in optimizing the operations at our plants. The competence base in Hydro's technology environments is on a high level in general and world-class in several core areas. As a result, we emphasize using this competence in operational improvements. Examples are reduced energy consumption in casting furnaces, new cathode solutions for relining of electrolysis cells, improved blending tools for utilization of recycled materials, reduced emissions from foil annealing furnaces, and improvement projects related to quality and productivity.

Upstream, we prioritize our R&D and innovation efforts toward technology development and operational efficiency, while downstream, we concentrate on application and product development. Part of our work downstream is conducted together with customers, reflecting design thinking from idea to solution.

The President's Award aims to energize all employees by recognizing excellent work and best-practice sharing. Awards are presented each year within the areas of HSE, innovation, performance and technology development. Winners should clearly demonstrate the spirit of The Hydro Way, emphasizing Hydro's values. In 2018, the Paragominas bauxite mine in Brazil won the most prestigious award, the Unit of the Year.

To promote idea generation and innovation, Hydro's corporate technology office manages a "New Idea" program for company employees. The program gives all employees the opportunity to apply for up to NOK 150,000 in funding to develop their idea to a maturity level where it could be further developed or implemented.

For more information about R&D in the individual business areas, please see the section "Business description" in this report.

Cooperation with other institutions

In Norway, we receive support from several public institutions to further develop our smelter and casthouse technology as well as our downstream activities. These include The Research Council of Norway, Enova, Innovation Norway and Prosessindustriens Miljøfond. In addition, comes the contribution of NOK 1.6 billion, granted in 2014, from Enova related to our Karmøy Technology Pilot in Norway. The majority of the support from The Research Council of Norway is paid directly to projects administered or partnered by Hydro at the Norwegian University of Science and Technology (NTNU), SINTEF or Institute for Energy Technology (IFE). Since 2015, we have been a partner in three centers for research-based innovation, supported by The Research Council of Norway: SFI Metal Production, SFI Center for Advanced Structural Analysis and SFI Manufacturing. These are cross-disciplinary R&D programs with a frame of eight years. For more information, see note S8 to the Viability performance statements about public funding.

We also participate in other national and EU-funded R&D projects on post-consumer scrap recycling technology, following market demand for products with a low carbon footprint. Our R&D program includes joint projects with external research institutes such as SINTEF, NTNU, IFE and the University of Oslo in Norway, RWTH Aachen in Germany and the University of Auckland in New Zealand.

Hydro has been a partner since 2016 in NAPIC, the NTNU Aluminium Product Innovation Center. Its purpose is to develop new aluminium applications. A consortium that comprises several downstream industries has been established and five different faculties at NTNU are participating. In order to support and speed up the activity, Hydro is sponsoring a new NTNU Professor in this area for five years, from autumn 2016.

Another major cooperation is participation in the AMAP (Advanced Metals and Processes) Research Cluster at RWTH Aachen, where among others, one BMWi-funded project deals with energy and resource-efficient recycling of organically contaminated aluminium scrap.

Financial and operating performance

103 Financial and operating review

103 Summary of underlying financial and operating results and liquidity

105 Reported EBIT and net income

106 Market developments and outlook

109 Additional factors impacting Hydro

110 Underlying EBIT - Business areas

115 Financial income (expense), net

115 Income tax expense

116 Pro forma information related to the acquisition of Sapa

117 Liquidity and capital resources

117 Cash flow and Liquidity

118 Contractual obligations, commitments and off-balance sheet arrangements

118 Employee retirement plans

118 Non-controlling interest and shareholders' equity

118 Investments

119 Return on Capital Employed (RoaCE)

Quick overview

Underlying EBIT for 2018 decreased to NOK 9,069 million from NOK 11,215 million for 2017. Hydro's underlying earnings before financial items and tax decreased reflecting negative effects relating to the production curtailment at Alunorte and increased raw material costs partly offset by a higher all-in metal price and alumina sales price as well as the positive contribution from the full consolidation of Extruded Solutions. Further, the result was positively impacted by strong Energy results and improved downstream margins and volumes.

Bauxite production in Paragominas amounted to 6.2 million mt for the year while alumina production from Alunorte was 3.7 million mt.

Primary aluminium production was about 2.0 million mt and we delivered 2.6 million mt of casthouse products and liquid metal to internal and external customers. Downstream, we shipped roughly 1 million mt of rolled products to the market. Extruded Solutions business area delivered around 1.4 million mt. Our energy business produced around 10.7 TWh of hydroelectric power.

Hydro's net cash (debt) changed from net debt of NOK 4.1 billion at the end of 2017 to a net debt position of NOK 8.7 billion at the end of 2018. Net cash provided by operating activities of NOK 7.0 billion was not sufficient to cover net cash used in invest activities of NOK 7.2 billion and dividend payments to Norsk Hydro shareholders of NOK 3.6 billion.

Financial and operating review

Summary of underlying financial and operating results and liquidity

Key financial information NOK million, except per share data	**Year 2018**	Year 2017
Revenue	**159,377**	109,220
Earnings before financial items and tax (EBIT)	**8,522**	12,189
Items excluded from underlying EBIT[1)]	**547**	(974)
Underlying EBIT[1)]	**9,069**	11,215
Underlying EBIT :		
Bauxite & Alumina	**2,282**	3,704
Primary Metal	**1,762**	5,061
Metal Markets	**686**	544
Rolled Products	**413**	380
Extruded Solutions[2)]	**2,390**	284
Energy	**1,846**	1,531
Other and eliminations[2)]	**(310)**	(289)
Underlying EBIT[1)]	**9,069**	11,215
Earnings before financial items, tax, depreciation and amortization (EBITDA)[3)]	**15,796**	18,344
Underlying EBITDA[1)]	**16,344**	17,369
Net income (loss)	**4,323**	9,184
Underlying net income (loss)[1)]	**5,819**	8,396
Earnings per share	**2.08**	4.30
Underlying earnings per share[1)]	**2.75**	3.95
Financial data:		
Investments[1)3)]	**7,614**	28,848
Net cash (debt)[1)]	**(8,653)**	(4,118)
Adjusted net cash (debt)[1)]	**(23,127)**	(17,968)
Underlying Return on average Capital Employed (RoaCE)[1)]	**6.5 %**	9.6 %

Key Operational information	**Year 2018**	Year 2017
Bauxite production (kmt)[4)]	**6,214**	11,435
Alumina production (kmt)	**3,712**	6,397
Realized alumina price (USD/mt)[5)]	**429**	326
Primary aluminium production (kmt)	**1,993**	2,094
Realized aluminium price LME (USD/mt)	**2,140**	1,915
Realized USD/NOK exchange rate	**8.08**	8.30
Rolled Products sales volumes to external market (kmt)	**951**	940
Extruded Solutions sales volumes to external market (kmt)[6)]	**1,396**	845
Power production (GWh)	**10,693**	10,835

1) Alternative performance measures (APMs) are described in the appendicies to the Board of Directors' report.
2) Other and eliminations includes Hydro's 50 percent share of underlying net income from Sapa until end of third quarter 2017. Extruded Solutions was fully consolidated from October 2, 2017.
3) EBITDA and investments per segment are specified in Note 7: Operating and geographic segment information in the consolidated finanical statements.
4) Paragominas production, on wet basis.
5) Weighted average of own production and third party contracts. The majority of the alumina is sold linked to either the LME prices or alumina index with one month delay.
6) Hydro's 50 percent share of Sapa sales volumes until end of third quarter 2017 and 100 percent of Extruded Solutions sales volumes from the beginning of the fourth quarter 2017.

The aluminum price was volatile during 2018, with a declining trend towards the end of the year

LME 3-month in USD per mt (Weekly average)

Implied primary aluminium cost and margin

USD per mt

Source: Ecowin

Hydro's underlying earnings before financial items and tax decreased reflecting negative effects relating to the production curtailment at Alunorte and increased raw material costs partly offset by a higher all-in metal price and alumina sales price as well as the positive contribution from the full consolidation of Extruded Solutions. Further, the result was positively impacted by strong Energy results and improved downstream margins and volumes.

Mainly due to the situation in Brazil, Hydro's "Better" improvement program did not reach the 2018 target of NOK 500 million. For the same reason, Hydro will not be able to meet its “Better” target for 2019.

Hydro's net cash (debt) changed from net debt of NOK 4.1 billion at the end of 2017 to a net debt position of NOK 8.7 billion at the end of 2018. Net cash provided by operating activities of NOK 7.0 billion was not sufficient to cover net cash used in invest activities of NOK 7.2 billion and dividend payments to Norsk Hydro shareholders of NOK 3.6 billion.

For 2018, Hydro's Board of Directors proposes a dividend of NOK 1.25 per share reflecting Hydro's robust financial situation, taking into account a demanding year for the company and the volatility in the aluminium industry. The proposed payment represents a 60 percent pay-out ratio of reported net income for the year and demonstrates the company's commitment to provide a competitive cash return to shareholders. Hydro has a dividend policy of 40 percent payout ratio of reported net income over the cycle with NOK 1.25 per share considered as a floor.

Reported EBIT and net income

In addition to the factors discussed above, reported earnings before financial items and tax (EBIT) and net income include effects that are disclosed in the below table. Items excluded from underlying EBIT and underlying net income (loss) are defined and described as part of the APM section in the back of this report.

Items excluded from underlying EBIT and net income[1)] NOK million	**Year 2018**	Year 2017
Unrealized derivative effects on LME related contracts	**39**	220
Unrealized derivative effects on power and raw material contracts	**(260)**	246
Metal effect, Rolled Products	**(73)**	(419)
Significant rationalization charges and closure costs[2)]	**79**	210
Alunorte agreements - provision[3)]	**519**	-
Other effects[4)]	**203**	212
Pension[5)]	**40**	-
Transaction related effects (Sapa)[6)]	**-**	(1,463)
Items excluded in equity accounted investments (Sapa)[7)]	**-**	19
Items excluded from underlying EBIT	**547**	(974)
Net foreign exchange (gain)/loss	**1,303**	875
Calculated income tax effect	**(355)**	(564)
Other adjustments to net income[8)]	**-**	(125)
Items excluded from underlying net income	**1,495**	(788)
Income (loss) tax rate	**33%**	17%
Underlying income (loss) tax rate	**30%**	24%

1) Negative figures indicate reversal of a gain and positive figures indicate reversal of a loss.
2) Significant rationalization charges and closure costs include in 2018 rationalization costs in Rolled Products of NOK 39 million and closure costs in Extruded Solutions of NOK 40 million. Environmental liabilities in Kurri Kurri of NOK 181 million and rationalization costs in Extruded Solutions of NOK 29 million were included in 2017.
3) Alunorte agreements - provision refers to the provision recognized in relation to the TAC and TC agreements with the Government of Parà and Ministèrio Pùblico made on September 5, 2018.
4) Other effects include in 2018 a charge of NOK 80 million due to adjustments to the value of certain assets in relation to the Sapa acquisition, a legal agreement of NOK 157 million related to Sapa Profiles Inc. (SPI) that has been under investigation (see note 35 to the Financial statements) and a gain of NOK 34 million due to remeasurement of environmental liabilities related to closed business in Germany. In addition to a gain of NOK 33 million related to the remeasurement of environmental liabilities in 2017, a charge of NOK 245 million related to a customs case in Germany was included in 2017.
5) Pension includes a charge of NOK 40 million due to remeasurement of all UK schemes with Guaranteed Minimum Pensions (GMP) required to be adjusted to equalize pension benefits for gender. The remeasurement is based on the accrued pension benefits in the period between 1990 and 1997.
6) Transaction related effects include the revaluation gain of NOK 2,171 million of Hydro's pre-transactional 50 percent interest in Sapa, as well as the fair value allocated to inventory of finished goods and to the backlog of contractual deliveries as of closure, sold during 2017, reflecting an expense of NOK 707 million.
7) Items excluded in equity accounted investments (Sapa) for the year 2017 include unrealized derivative gains, rationalization charges and net foreign exchange gains.
8) Other adjustments to net income include reduction in tax expense and related interest income of NOK 125 million in total following a closed tax case in September 2017.

Market developments and outlook

Industry statistics, commentary and other information in the table and text in this section have been derived from analyst reports, trade associations and other public sources as well as Hydro's own analysis unless otherwise indicated. The information in this section is intended to provide an overview of the main developments in the key markets Hydro is exposed to. Statistics presented in prior reports may have been restated based on updated information. Currency rates have been derived from Norges Bank.

Market statistics	**Year 2018**	Year 2017	% change prior year
USD/NOK Average exchange rate	**8.13**	8.26	(2) %
USD/NOK Period end exchange rate	**8.69**	8.21	6 %
BRL/NOK Average exchange rate	**2.23**	2.59	(14) %
BRL/NOK Period end exchange rate	**2.24**	2.48	(10) %
USD/BRL Average exchange rate	**3.66**	3.19	15 %
USD/BRL Period end exchange rate	**3.88**	3.31	17 %
EUR/NOK Average exchange rate	**9.60**	9.33	3 %
EUR/NOK Period end exchange rate	**9.95**	9.84	1 %
Bauxite and alumina:			
Average alumina price - Platts PAX FOB Australia (USD/t)	**474**	355	34 %
China bauxite import price (USD/mt CIF China)	**53**	51	4 %
Global production of alumina (kmt)	**123,488**	123,999	-
Global production of alumina (ex. China) (kmt)	**52,873**	55,687	(5) %
Primary aluminium:			
LME cash average ((USD/mt)	**2,110**	1,969	7 %
LME three month average (USD/mt)	**2,115**	1,980	7 %
Standard ingot premium (EU DP Cash)	**164**	148	11 %
Extrusion ingot premium (EU DP)	**455**	334	36 %
Chinese production of primary aluminium (kmt)	**36,222**	36,234	-
Chinese consumption of primary aluminium (kmt)	**35,900**	34,397	4 %
Global production of primary aluminium (ex. China) (kmt)	**27,598**	27,223	1 %
Global consumption of primary aluminum (ex. China) (kmt)	**29,768**	29,087	2 %
Global production of primary aluminium (kmt)	**63,820**	63,457	1 %
Global consumption of primary aluminum (kmt)	**65,668**	63,485	3 %
Reported primary aluminium inventories (ex. China) (kmt)	**2,931**	2,790	5 %
Reported primary aluminium inventories (China) (kmt)	**1,998**	2,580	(23) %
Rolled products and extruded products:			
Consumption rolled products - Europe (kmt)	**4,961**	4,823	3 %
Consumption rolled products - USA & Canada (kmt)	**5,281**	5,065	4 %
Consumption extruded products - Europe (kmt)	**3,236**	3,156	3 %
Consumption extruded products - USA & Canada (kmt)	**2,540**	2,440	4 %
Energy:			
Average southern Norway spot price (NO2) (NOK/MWh)	**415**	269	54 %
Average mid Norway spot price (NO3) (NOK/MWh)	**423**	275	54 %
Average nordic system spot price (NOK/MWh)	**423**	274	54 %

On March 8, 2018 the US administration announced a 10 percent tariff on aluminium imports to the US, effective from March 23. Argentina and Australia are exempted from the 10 percent tariff, although Argentina will be covered by a quota. On September 30, 2018 The US, Canada and Mexico came to an agreement on a revised trade deal, called the United States Mexico Canada Agreement (USMCA), replacing the 1994 NAFTA agreement. The USMCA is expected to be ratified during 2019 and does not address the 10 percent tariff on imported aluminium.

On April 6, 2018 the US Department of Treasury’s Office of Foreign Assets Control (OFAC) issued a sanctions list that included Russian individuals and companies including the Russian aluminium company Rusal, controlled by Oleg Deripaska. On December 19, 2018 OFAC submitted a notification to the US Congress of its intention to remove Rusal from the sanctions list. Despite attempts to postpone the deadline further, OFAC deleted Rusal from the sanctions list as of January 27, 2019 meaning that the sanctions directed towards the company are now lifted.

Motor vehicle production in Europe declined as manufacturers reduced the pace of output in response to a backlog in certifying vehicles' carbon dioxide emission as part of the new Worldwide Harmonized Light Vehicles Test Procedure (WLTP), introduced by the European Union in 2017, effective September 2018.

Bauxite and alumina
The Platts alumina price index started the year at USD 389 per mt ranging from USD 357-710 per mt during 2018 and ending the year at USD 408 per mt. The significant variation was caused by the Alunorte production embargo and the prospect of US sanctions against UC Rusal coming into effect. Prices averaged USD 474 per mt for the year, a 34 percent increase compared to 2017. Prices as a percentage of LME varied, averaging 22.5 percent for the year compared with 17.8 percent in 2017. Spot prices at the end 2018 represented 22.1 percent of LME.

Traditionally an alumina importer (2.9 million mt in 2017), China was a net exporter in 2018 (1.0 million mt) which was required to balance the World ex China alumina market, undersupplied as a result of the Alunorte production embargo. The duration of the embargo in 2019 will be the most important factor determining China's Alumina trade flows.

China imported 82.7 million mt of bauxite in 2018, 20 percent higher than the previous year. Driven by new mines increasing production, imports from Guinea increased 38 percent from 2017 to 38.2 million mt, outstripping the 17 percent increase in imports from Australia (29.8 million mt). Those two countries accounted for 82 percent of China's bauxite imports. The first full year of exports after a government-imposed export ban was lifted in the middle of 2017 resulted in a significant increase of imports from Indonesia (7.5 million mt). Imports from Brazil fell 52 percent to 1.6 million mt. Imports from Malaysia decreased 92 percent to 0.5 million mt as a bauxite mining moratorium imposed since January 2016 was strictly enforced.

The price of bauxite imported into China in 2018 increased to an annual average of USD 53 per mt CIF China compared to USD 51 per mt CIF China in 2017.

Primary aluminium
Three-month LME prices started the year around USD 2,250 per mt and experienced periods of high volatility during the year. The prices declined during the first quarter and were trading below USD 2,000 in early April. Following the announcement of US sanctions against UC Rusal in early April, prices fluctuated with several hundred dollars, up to levels above USD 2,500 and back down below USD 2,300 within just a couple of weeks. Markets normalized during the latter part of the second quarter, resulting in more stable prices. In line with increased macroeconomic uncertainty, prices experienced a declining trend in the second half of 2018. At the end of the fourth quarter, prices had declined by around USD 400 per mt over the year, ending 2018 at around USD 1,850 per mt. Prices averaged USD 2,210 per mt in the first half of 2018 and declined to an average of USD 2,023 per mt in the second half of the year.

North American and European standard ingot and product premiums started the year at USD 209 per mt and at USD 162 per mt respectively. The premiums increased sharply towards the end of the first quarter, reflecting main events such as the imposition of a 10 percent import tariff in the US as well as sanctions against UC Rusal. North American premium reached a peak of USD 490 per mt in late April, largely reflecting the cost of the 10 percent tariff, while European premium increased to USD 250 per mt in the same period. Premiums in both regions had a declining trend throughout the rest of the year, ending the year at USD 419 in North America and USD 115 in Europe. The decline was influenced by falling LME prices, exports of semi-finished products from China and increased availability of secondary aluminium especially in the North American market. Average North American standard ingot premiums increased USD 220 per mt compared to 2017, while corresponding standard ingot premiums in Europe increased about USD 15 per mt.

Global primary aluminium consumption increased by 3 percent to 65.7 million mt in 2018. Global supply increased by 0.5 percent to 63.8 million mt resulting in large global deficit of around 1.6 million mt. For 2019, global primary aluminium demand is expected to increase by 2-3 percent, resulting in a global deficit market also in 2019.
Demand for primary aluminium outside China increased by around 2.1 percent in 2018, while corresponding production increased by 1.4 percent. Overall, demand outside China exceeded production by around 2.1 million mt in 2018. Demand for primary aluminium outside China is expected to grow by around 1-3 percent in 2019. Corresponding production is expected to be up 3-4 percent, resulting in a deficit in the world outside China also in 2019.

Demand for primary metal in China increased around 4 percent to 35.9 million mt in 2018. Chinese production growth was close to zero in 2018, resulting in only a small surplus for the year. The historically low Chinese production growth was a result of closures of illegal capacity in 2017, in addition to slower-than-expected ramp ups of new projects as a result of low margins during the year. Chinese primary production growth is expected to increase by 2-4 percent in 2019. This is well below historical average, a result of the direction set out by Chinese authorities to reduce overcapacity within primary aluminium. Primary demand is estimated to increase by around 2-4 percent, resulting in a small surplus in 2019.

Demand for extrusion ingot, foundry alloys and sheet ingot in Europe increased in 2018 compared to the previous year. The consumption of wire rod in the European market went up moderately in 2018 compared to 2017. Consumption of extrusion ingot has been strong in the US also in 2018, while the demand for primary foundry remained stable compared to 2017. In Asia (excluding China), the market for extrusion ingot and primary foundry alloys continued to show moderate growth during 2018.

LME stocks increased slightly in 2018, from 1.1 million mt at the end of 2017 to 1.3 million mt at the end of 2018. The increase occurred mainly in the fourth quarter, driven by backwardation attracting metal to LME warehouses. Total inventories, including unreported inventories are estimated to have declined throughout 2018. The total stock level is estimated to be around 11.0 million mt at the end of 2018.

Rolled products
The European market for flat rolled products increased by around 2.9 percent in 2018. Demand growth was stronger in the first half of the year, which was driven by automotive and general engineering. The European market was impacted by increased imports, trade tensions, the Brexit situation and economic conditions which started to weaken in the fourth quarter of 2018.

The automotive segment continued to be the fastest growing segment due to the substitution of steel by aluminium for automotive body sheet. However, car production declined by 3-4 percent in Western Europe impacted by delays in WLTP certification, trade uncertainties and potential effects of a hard Brexit. Emobility has become a key topic and is expected to have a positive impact on aluminium consumption.

In building and construction, mild weather conditions across Europe had a positive effect on demand while intensified competition caused a negative effect on margins. Demand in the beverage can segment was solid, supported by the conversion of beverage can production lines from steel to aluminium as a result of growing underlying demand for aluminium cans.

Foil showed modest demand growth in Europe and was impacted by increased foil imports, particularly from China. On the positive side, European producers were benefitting from increased exports to the US as a result of the anti-dumping duty imposed by the US on Chinese foil imports. Demand in general engineering was stable but also impacted by increased imports from China.

Extruded products
Europe experienced positive demand throughout most segments during the year and an aggregated growth of 2.4 percent is estimated. Automotive market had a slow-down in build rates driven partially by the WLTP in 2018, however aluminum penetration growth offset lower vehicle output. The European market for building systems was positive in the year on aggregated level after several years of contraction.

North America, with an aggregated growth of close to 4 percent, was driven by a strong demand in transportation sector, with heavy-duty truck and trailer build rates growing as a result of robust freight demand and economic activity. Positive demand in building and construction market, supported by strong housing starts in residential segment and improved outlook in the commercial sector.

Energy
In 2018, Nordic electricity prices increased compared to the previous year, primarily due to weaker hydrological balance both in the Nordic and Continental areas and also higher marginal cost for coal and gas power plants. An important price driver during the year was the carbon price which increased substantially ahead of the introduction of the Market stability Reserve (MSR) from January 2019. The Nordic power prices turned out particularly strong during the summer and early autumn due to dry weather, low nuclear power availability and high continental power prices.

The Nordic hydrological balance ended the year at around 15 TWh below normal. Water reservoirs in Norway were at 63.9 percent of full capacity at the end of the year, which is 8.4 percentage points below the normal level. Snow reservoirs were slightly below normal level at the end of the year.

In Brazil, power prices varied significantly during the year. During the wet season at the start of the year, a temporary oversupply in the North region drove prices to low levels, while prices increased again during the summer, in periods to the defined maximum level as decided by the market regulators. However, heavy rainfall in October and November improved the hydrological balance and lead to decreasing prices towards the end of the year.

Additional factors impacting Hydro

Hydro Extrusion Portland, Inc. (formerly Sapa Profiles, Inc.) (SPI), a Portland, Oregon-based indirect subsidiary of Hydro Extruded Solutions AS (formerly Sapa AS) (Hydro) is under investigation by the United States Department of Justice (DOJ) Civil and Criminal Divisions regarding certain aluminum extrusions that SPI manufactured from 1996 to 2015, including extrusions that were delivered to a supplier to NASA. SPI is cooperating fully in these investigations, which are currently ongoing. In the ongoing discussions with DOJ, an agreement in principle has been reached, requiring Hydro to pay an amount of around NOK 400 million subject to further terms that still have to be agreed in order to resolve the investigations. As part of the share purchase agreement between Hydro and Orkla ASA, the parties have agreed that Orkla ASA shall indemnify Hydro for 50 percent of any liability related to these investigations.

On 21 December 2018, the Flow Systems group of companies were unexpectedly put under voluntary administration and are in the process of being sold as a going-concern (whole or partial) or liquidated individually. There is a significant risk that the transaction agreement entered into in July 2018, whereby Flow Systems would purchase Hydro's former Kurri Kurri primary aluminium site, will be terminated as part of the voluntary administration proceedings during Q1 2019.

Underlying EBIT – Business areas

To provide a better understanding of Hydro's underlying performance, the following discussion of operating performance excludes certain items from EBIT (earnings before financial items and tax) and net income, such as unrealized gains and losses on derivatives, impairment and rationalization charges, effects of disposals of businesses and operating assets, as well as other items that are of a special nature or are not expected to be incurred on an ongoing basis. See Alternative Performance Measures (APMs) in the Appendices to the Board of Directors' report.

Bauxite & Alumina

Operational and financial information	**Year 2018**	Year 2017	% change prior year
Earnings before financial items and tax (EBIT) (NOK million)	**1,763**	3,704	(52) %
Underlying EBIT (NOK million)	**2,282**	3,704	(38) %
Underlying EBITDA (NOK million)	**4,377**	6,190	(29) %
Alumina production (kmt)	**3,712**	6,397	(42) %
Sourced alumina (kmt)	**3,954**	2,522	57 %
Total alumina sales (kmt)	**7,607**	8,920	(15) %
Realized alumina price (USD/mt) [1]	**429**	326	32 %
Bauxite production (kmt) [2]	**6,214**	11,435	(46) %
Sourced bauxite (kmt) [3]	**5,202**	7,601	(32) %

1) Weighted average of own production and third party contracts. The majority of the alumina is sold linked to LME prices with a one month delay.
2) Paragominas on wet basis.
3) 40 percent MRN off take from Vale and 5 percent Hydro share on wet basis.

Underlying EBIT for Bauxite & Alumina decreased significantly compared to 2017. The results were driven by the effects of reduced production at both Alunorte and Paragominas and higher raw material prices partly offset by higher realized alumina sales prices and positive currency effects.

Due to the situation at Alunorte, Bauxite and Alumina's "Better" improvement program did not reach the 2018 target.

Bauxite & Alumina generated total revenues of about NOK 29 billion in 2018. Bauxite production in Paragominas amounted to 6.2 million mt for the year. Alumina production from Alunorte was 3.7 million mt for the year. Production levels for both operations were at 50 percent compared to 2017 due to the production embargoes in force since March 2018. Bauxite & Alumina sourced 4.0 million mt of alumina in 2018. The business area employs around 3,500 people.

Primary Metal

Operational and financial information[1]	Year 2018	Year 2017	% change prior year
Earnings before financial items and tax (EBIT) (NOK million)	**2,123**	4,729	(55) %
Underlying EBIT (NOK million)	**1,762**	5,061	(65) %
Underlying EBITDA (NOK million)	**3,906**	7,078	(45) %
Realized aluminium price LME (USD/mt) [2]	**2,140**	1,915	12 %
Realized aluminium price LME (NOK/mt) [2]	**17,282**	15,888	9 %
Realized premium above LME (USD/mt) [3]	**346**	265	31 %
Realized premium above LME (NOK/mt) [3]	**2,791**	2,197	27 %
Realized USD/NOK exchange rate	**8.08**	8.30	(3) %
Primary aluminium production (kmt)	**1,993**	2,094	(5) %
Casthouse production (kmt)	**2,058**	2,169	(5) %
Total sales (kmt)	**2,145**	2,278	(6) %

1) Operating and financial information includes Hydro's proportionate share of underlying income (loss), production and sales volumes in equity accounted investments.
2) Realized aluminium prices lag the LME price developments by approximately 1.5 - 2 months.
3) Average realized premium above LME for casthouse sales from Primary Metal.

Operational and financial information Qatalum (50%)	Year 2018	Year 2017	% change prior year
Revenue (NOK million)	**6,202**	5,821	7 %
Underlying EBIT (NOK million)	**971**	985	(1) %
Underlying EBITDA (NOK million)	**2,085**	2,157	(3) %
Net income (loss) (NOK million)	**724**	747	(3) %
Underlying Net income (loss) (NOK million)	**724**	747	(3) %
Primary aluminium production (kmt)	**308**	310	(1) %
Casthouse sales (kmt)	**315**	325	(3) %

		Primary aluminium		Casthouse production	
Primary aluminium and casthouse production (kmt)[1]	Location	2018	2017	2018	2017
Albras	Brazil	**308**	447	**250**	398
Karmøy	Norway	**242**	195	**228**	176
Årdal	Norway	**207**	210	**216**	220
Sunndal	Norway	**405**	407	**450**	463
Høyanger	Norway	**65**	65	**94**	95
Husnes	Norway	**94**	94	**115**	107
Slovalco	Slovakia	**174**	173	**197**	198
Tomago (12.4%)	Australia	**74**	73	**73**	73
Qatalum (50%)	Qatar	**308**	310	**318**	321
Alouette (20%)	Canada	**117**	120	**115**	119
Total production Primary Aluminium		**1,993**	2,094	**2,058**	2,169

1) Production volumes for non-consolidated part owned companies represent our proportion of total production. For financial reporting purposes, Qatalum is accounted for as equity accounted investments, while Tomago and Alouette are consolidated on a proportional basis. Slovalco and Albras are fully consolidated in terms of financial results and volumes.

Underlying EBIT for the year 2018 declined substantially compared to 2017. Lower sales volumes, negative currency effects, higher raw material and fixed cost, were partly offset by higher all-in metal prices.

The "Better Primary Metal" improvement program did not reach its target for 2018 mainly due to the production curtailment at Alunorte resulting in the production curtailment at Albras. The reduced availability of alumina from Alunorte resulted in externally sourced alumina of a different quality which contributed negatively to operational performance at the affected smelters.

Primary Metal generated about NOK 39 billion in total revenues in 2018. Production of electrolysis metal amounted to 2.0 million mt, from our plants in Australia, Brazil, Canada, Norway, Qatar and Slovakia. We delivered 2.1 million mt of casthouse products to internal and external customers from casthouses which are integrated with our primary aluminium plants. Deliveries included about 0.9 million mt of extrusion ingot, 0.3 million mt of sheet ingot and 0.5 million mt of foundry alloys

and wire rod. We also sold about 0.5 million mt of standard ingot and liquid metal. Primary Metal employs around 4,000 people.

Metal Markets

Operational and financial information	Year 2018	Year 2017	% change prior year
Earnings before financial items and tax (EBIT) (NOK million)	**886**	485	83 %
Underlying EBIT (NOK million)	**686**	544	26 %
Currency effects	**(25)**	83	>(100) %
Inventory valuation effects	**53**	(38)	>100 %
Underlying EBIT excl. currency and inventory valuation effects	**658**	499	32 %
Underlying EBITDA (NOK million)	**786**	638	23 %
Remelt production (kmt)	**563**	568	(1) %
Metal products sales excluding ingot trading (kmt) [1]	**2,859**	2,921	(2) %
Hereof external sales (kmt)	**2,217**	2,575	(14) %

1) Includes external and internal sales from primary casthouse operations, remelters and third party metal sources.

Remelt production (kmt)	Location	Year 2018	Year 2017	% change prior year
Europe				
Clervaux	Luxembourg	**93**	97	(4) %
Deeside	United Kingdom	**56**	58	(3) %
Rackwitz	Germany	**94**	90	4 %
Luce	France	**44**	55	(20) %
Azuqueca	Spain	**82**	80	3 %
US				
Henderson	Kentucky	**88**	88	-
Commerce	Texas	**107**	100	7 %
Total remelt production Metal Markets		**563**	568	(1) %

Underlying EBIT for the year 2018 improved compared with 2017, mainly due to higher results from the remelters and positive contribution from inventory valuation effects. This was partly offset by lower results from sourcing and trading activities and negative currency effects.

Metal Markets generated total revenues of around NOK 54 billion in 2018. The business area employs around 670 people at plants and offices in Asia, Europe and North America. Our five remelters in Europe and two in the U.S. produced approximately 563 kmt of metal products in 2018. We sold 2.9 million mt of metal products last year, including deliveries from the casthouses integrated with our primary smelters. Of this figure, we sold approximately 2.2 million mt to external customers.

Rolled Products

Operational and financial information	Year 2018	Year 2017	% change prior year
Earnings before financial items and tax (EBIT) (NOK million)	**336**	512	(34) %
Underlying EBIT (NOK million)	**413**	380	9 %
Underlying EBITDA (NOK million)	**1,340**	1,240	8 %
Sales volumes to external market (kmt)	**951**	940	1 %

Sales volumes to external markets (kmt) - Product areas			
Can & foil	**348**	352	(1) %
Lithography & automotive	**309**	297	4 %
Special products	**295**	291	1 %
Rolled Products	**951**	940	1 %

Rolled Products production sites Volumes to external market (kmt)	**Location**	**Year 2018**	Year 2017	% change prior year
Grevenbroich / 50% share in Alunorf	Germany	**632**	628	1 %
Hamburg	Germany	**153**	146	5 %
Karmøy	Norway	**78**	80	(3) %
Holmestrand	Norway	**88**	87	1 %
Total, excluding internal sales		**951**	940	1 %

Underlying EBIT for the full year 2018 improved somewhat compared to 2017. The result was mainly driven by improved margins, improved performance from Automotive line 3 in addition to a positive development from the Hamburg plant following operational issues in 2017. These positive effects were offset by Alunorf performance, an increase in energy costs, personnel costs and negative currency effects. Results for the Neuss smelter improved slightly, the positive impacts of the new power contracts and increased all-in metal prices were to a large extent offset by significantly higher raw material prices.

Despite highgrading and margin improvements Rolled Products did not achieve its "Better Rolled Products" program target for 2018. This was mainly due to lower than expected performance at Alunorf, resulting in reduced production volume, as well as further delays in the speed of the ramp up of the UBC line at Neuss. The "Better Rolled Products" improvement ambition is delayed by one year, now targeting NOK 900 million by 2020.

Rolled Products generated total revenues of approximately NOK 27 billion in 2018. Approximately 951,000 mt of rolled products were shipped from our five European rolling mills. Rolled Products employs around 4,100 permanent and 450 temporary employees.

Extruded Solutions

Operational and financial information	Year 2018	Year 2017	% change prior year
Earnings before financial items and tax (EBIT) (NOK million)	**1,774**	1,722	3 %
Underlying EBIT (NOK million)	**2,390**	284	>100 %
Underlying EBITDA (NOK million)	**4,114**	728	>100 %
Sales volumes to external markets (kmt)	**1,396**	318	>100 %

Sales volumes to external markets (kmt) - Business units[1)]			
Extrusion Europe	**568**	130	>100 %
Extrusion North America	**598**	134	>100 %
Building Systems	**77**	19	>100 %
Precision Tubing	**154**	34	>100 %
Extruded Solutions	**1,396**	318	>100 %

1) 2017 volumes for fourth quarter only

The new Extruded Solutions business area was formed at the beginning of the fourth quarter 2017, following Hydro's acquisition of the remaining 50 percent of Sapa shares. The business areas' financial results are fully consolidated from the closing date October 2, 2017.

Sapa's financial results prior to the transaction were reported as a 50 percent owned joint venture in the Other and eliminations section.

For pro forma information related to the Extruded Solutions business area and a more detailed results explanation please see the corresponding section later in this report.

Energy

Operational and financial information	**Year 2018**	Year 2017	% change prior year
Earnings before financial items and tax (EBIT) (NOK million)	**1,853**	1,531	21 %
Underlying EBIT (NOK million)	**1,846**	1,531	21 %
Underlying EBITDA (NOK million)	**2,100**	1,757	20 %
Direct production costs (NOK million)[1]	**630**	614	3 %
Power production (GWh)	**10,693**	10,835	(1) %
External power sourcing (GWh)	**9,217**	9,562	(4) %
Internal contract sales (GWh)	**14,848**	14,424	3 %
External contract sales (GWh)	**858**	767	12 %
Net spot sales (GWh)	**4,204**	5,206	(19) %

1) Include operational costs except for depreciation, maintenance costs, property taxes, concession fees for Hydro as operator and transmission costs

Underlying EBIT for 2018 increased mainly due to significantly higher prices, partly offset by negative effects from the repricing of an internal power contract with the Neuss smelter and somewhat lower production.

Energy generated about NOK 8.7 billion in total revenues in 2018. Energy produced 10.7 TWh of renewable hydroelectric power, which is above our normal annual production of 10 TWh but lower than our 10.8 TWh production in 2017. The business area employs around 190 people, mainly in Norway.

Other and eliminations

Financial information NOK million	**Year 2018**	Year 2017	% change prior year
Earnings before financial items and tax (EBIT)	**(214)**	(495)	57 %
Sapa (50%) [1]		819	(100) %
Other	**(851)**	(586)	(45) %
Eliminations	**541**	(522)	>100 %
Underlying EBIT	**(310)**	(289)	(7) %

1) Hydro's share of Sapa's underlying net income.

Other is mainly comprised of head office costs, and costs related to holding companies as well as earnings from Hydro's industrial insurance company. Other also includes transaction and integration costs related to the Sapa transaction.

Eliminations are comprised mainly of unrealized gains and losses on inventories purchased from group companies which fluctuate with product flows, volumes and margin developments throughout Hydro's value chain.

Following the acquisition of the remaining 50 percent interest in Sapa AS completed on October 2, 2017, Sapa AS has been renamed Hydro Extruded Solutions AS and the fully consolidated financial results are presented in the Extruded Solutions business area.

Finance income (expense), net

Financial income (expense)

NOK million	**Year 2018**	Year 2017	% change prior year
Interest income	**250**	322	(23)%
Dividends received and net gain (loss) on securities	**6**	159	(96)%
Finance income	**255**	481	(47)%
Interest expense	**(699)**	(378)	(85)%
Capitalized interest	**1**	76	99 %
Net foreign exchange gain (loss)	**(1,303)**	(875)	(49)%
Net interest on pension liability	**(138)**	(152)	9 %
Other	**(175)**	(266)	34 %
Finance expense	**(2,315)**	(1,596)	(45)%
Finance income (expense), net	**(2,060)**	(1,114)	(85)%

The loss for the year 2018 is mainly comprised of currency loss on USD denominated debt in Brazil, and unrealized currency loss on embedded derivatives in Norwegian power contracts denominated in EUR.

The net finance items are also affected by provisions for interest expenses on tax cases in Brazil.

Income tax expense

Income taxes amounted to a charge of NOK 2,139 million in 2018, compared with a charge of NOK 1,891 million in 2017. The tax expense rate was about 33 percent of income before tax. The tax rate reflects the relatively high share of reported income before tax subject to power surtax.

Pro forma information

The following section is comprised of selected financial and operating information and a discussion of underlying developments including 100 percent of the acquired Sapa business for the full year 2017.

Summary consolidated underlying financial and operating results

Key financial information NOK million	**Year 2018**	Year 2017	% change prior year
Revenue	**159,377**	148,920	7 %
Earnings before financial items and tax (EBIT)	**8,522**	11,927	(29) %
Items excluded from underlying EBIT	**547**	510	7 %
Underlying EBIT[1)]	**9,069**	12,437	(27) %
Earnings before financial items, tax, depreciation and amortization (EBITDA)	**15,796**	19,294	(18) %
Underlying EBITDA	**16,344**	19,786	(17) %

1) Underlying EBIT includes certain effects of the acquisition such as increased depreciation and amortization following fair value adjustment related to long-lived assets.

Extruded Solutions

Operational and financial information	**Year 2018**	Year 2017	% change prior year
Revenue (NOK million)	**64,085**	57,769	11 %
Earnings before financial items and tax (EBIT) (NOK million)	**1,774**	2,265	(22) %
Unrealized derivative effects (NOK million)	**299**	36	>100 %
Significant rationalization charges and closure costs (NOK million)[1)]	**40**	29	38 %
Pension[2)]	**40**	-	-
Other effects[3)]	**237**	-	-
Items excluded from underlying EBIT (NOK million)	**616**	65	>100 %
Underlying EBIT (NOK million)	**2,390**	2,330	3 %
Earnings before financial items, tax, depreciation and amortization (EBITDA)	**3,498**	3,917	(11) %
Underlying EBITDA (NOK million)	**4,114**	3,982	3 %
Sales volumes to external markets (kmt)	**1,396**	1,372	2 %

Sales volumes to external markets (kmt) - Business units			
Extrusion Europe	**568**	568	-
Extrusion North America	**598**	584	2 %
Building Systems	**77**	78	(1) %
Precision Tubing	**154**	143	8 %
Extruded Solutions	**1,396**	1,372	2 %

1) Significant rationalization charges and closure costs of NOK 40 million in 2018 relate to partial closure of the Burlington plant, while the charges in 2017 relates to certain effects of the acquisition such as increased depreciation and amortization following fair value adjustments related to long-lived assets.

2) Pension includes a charge of NOK 40 million due to remeasurement of all UK schemes with Guaranteed Minimum Pensions (GMP) required to be adjusted to equalize pension benefits for gender. The remeasurement is based on the accrued pension benefits in the period between 1990 and 1997.

3) Other effects in Extruded Solutions include a charge of NOK 80 million due to adjustments to the value of certain assets in relation to the acquisition, and a legal agreement of NOK 157 million related to Sapa Profiles Inc. (SPI) that is under investigation (see note 35 to the Financial statements).

Underlying EBIT for Extruded Solutions in 2018 was on the same level as pro forma underlying EBIT in 2017. The positive effects of higher margins and sales volumes were offset by increased production costs in connection with the ramp-up of new product lines in Europe. Additional costs due to the integration and restructuring of the two recently acquired Brazilian extrusion plants also had a negative effect for the year.

Liquidity and capital resources

The table below includes information on Hydro's liquidity, debt, investments and financial position and performance for the years indicated. See note 39 to the consolidated financial statements for more information on Hydro's capital management practices. See the shareholder information section of this report for more information on Hydro's dividend policy, share buybacks and funding and credit rating.

Liquidity and financial position NOK million, except ratios and RoaCE	**Year 2018**	Year 2017
Net cash provided by continuing operating activities	**7,025**	14,347
Cash and cash equivalents	**5,995**	11,828
Short-term investments[1)]	**975**	1,311
Liquid assets	**6,970**	13,139
Short-term debt	**(8,543)**	(8,245)
Long-term debt	**(7,080)**	(9,012)
Net cash (debt)	**(8,653)**	(4,118)
Adjusted net cash (debt)[2)]	**(23,127)**	(17,968)
Adjusted net cash (debt) incl. EAI[2)]	**(28,711)**	(23,767)
Adjusted net cash (debt) incl. EAI / Equity[3)]	**0.32**	0.26
Investments[4)]	**7,614**	28,848
Capital employed	**99,422**	96,327
Return on average capital employed (RoaCE)[5)]	**5.9%**	11.2%
Funds from operations / Adjusted net cash (debt)[6)]	**0.46**	0.68

1) Hydro's policy is that the maximum maturity for cash deposits is 12 months. Cash flows relating to bank time deposits with original maturities beyond three months are classified as investing activities and included in short-term investments on the balance sheet. See note 25 to the consolidated financial statements for more information on short-term investments.
2) See note 39 to the consolidated financial statements for more information on Adjusted net cash (debt) and equity.
3) Adjusted net cash (debt) to equity ratio and other financial metrics included in this report are calculated including net debt per individual equity accounted investment.
4) Alternative performance measures (APMs) are described in the section Appendices to the Board of Directors' report.
5) Based on reported EBIT after tax.
6) The full calculations of Funds from operations and Adjusted net cash (debt) are presented in note 39 to the consolidated financial statements.

Cash flow and liquidity

Hydro manages its liquidity at corporate level, ensuring sufficient funds to cover group operational requirements. Net cash provided by operating activities of NOK 7.0 billion was close to net cash used in investing activities of NOK 7.2 billion.

Hydro's net cash (debt) changed from net debt of NOK 4.1 billion at the end of 2017 to a net debt position of NOK 8.7 billion at the end of 2018. Hydro's adjusted net cash (debt) to equity ratio was 32 percent, well below its targeted maximum ratio of 55 percent. Our funds from operations/adjusted net cash (debt) ratio was 46 percent, above the targeted minimum of 40 percent over the business cycle. See note 39 for information on Hydro's capital management measures.

Norsk Hydro ASA has a USD 1.7 billion revolving multi-currency credit facility with a syndicate of international banks, maturing in November 2020. The facility was undrawn per year-end 2018.The facility will continue to serve primarily as a back-up for unforeseen funding requirements. See note 39 to the consolidated financial statements for additional information.

Contractual obligations, commitments and off balance sheet arrangements

A summary of Hydro's total contractual obligations and commercial commitments to make future payments is presented below. For further information, see notes 22 Operating leases, 34 Short and long-term debt, 35 Provisions and 41 Contractual commitments and other commitments for future investments to Hydro's consolidated financial statements.

		Payments due by period			
Amounts in NOK million	**Total**	Less than 1 year	1-3 years	3-5 years	Thereafter
Long-term debt including interest	**11,139**	3,106	2,598	3,279	2,156
Operating lease obligations	**2,884**	693	1,046	500	645
Unconditional purchase obligations [1]	**167,347**	33,124	38,210	24,316	71,697
Contractual commitments for PP&E	**6,360**	5,397	928	35	-
Short-term and long-term provisions [2]	**8,868**	3,281	2,219	633	2,735
Total contractual and non-contractual obligations	**196,598**	45,600	45,001	28,764	77,233

1) Unconditional purchase obligations exclude long-term contracts with equity accounted investees.
2) Short-term and long-term provisions include certain accruals and provisions which are non-contractual but relate to liabilities or obligations that are measurable and expected to occur in future periods.

Employee retirement plans

Hydro's employee retirement plans consist of defined benefit and defined contribution pension plans. As of December 31, 2018, the defined benefit obligation associated with Hydro's defined benefit plans was NOK 27.3 billion. The fair value of pension plan assets was NOK 17.8 billion, resulting in a net unfunded obligation relating to the plans of NOK 9.5 billion. In addition, other net pension related liabilities amounted to NOK 1.0 billion, resulting in a total net unfunded pension liability of NOK 10.5 billion. Hydro's pension expense for 2018 amounted to NOK 1.2 billion. Cash outflows from operating activities in 2018 regarding pensions amounted to approximately NOK 1.2 billion. See note 37 in the consolidated financial statements for more information on Hydro's employee retirement plans.

Non-controlling interest and shareholders' equity

Non-controlling interest was NOK 4,936 million as of December 31, 2018, compared with NOK 5,178 million as of December 31, 2017. Shareholders' equity amounted to NOK 90,769 million at the end of 2018, compared with NOK 92,209 million at the end of 2017 as restated for changes in accounting principles. The main items impacting shareholders' equity in 2018 and 2017 included net income, currency translation adjustments and dividends declared and paid. See the consolidated statements of changes in equity and note 38 Shareholders'equity to Hydro's consolidated financial statements for a detailed reconciliation of shareholders' equity.

Investments

Investments in 2018 amounted to NOK 7,614 million, compared with NOK 28,848 million in 2017.

Investments[1] Amounts in NOK million	**Year 2018**	Year 2017	% change prior year
Bauxite & Alumina	**963**	1,634	(41) %
Primary Metal	**2,724**	3,537	(23) %
Metal Markets	**165**	143	15 %
Rolled Products	**1,047**	997	5 %
Extruded Solutions[2]	**2,390**	22,137	(89) %
Energy	**280**	361	(22) %
Other and eliminations	**45**	39	15 %
Total	**7,614**	28,848	(74) %

1) Additions to property, plant and equipment (capital expenditures) plus long-term securities, intangible assets, long-term advances and investments in equity accounted investments, including amounts recognized in business combinations.
2) The Extruded Solutions segment includes the business acquired as a 100 percent owned subsidiary in the fourth quarter 2017. See note 6 Significant subsidiaries and changes to the consolidated group for further information.

Investments include maintenance activities to safeguard our production assets. A summary of the significant investments that were made in addition to maintenance activities for both 2018 and 2017 is included below.

Investments in Bauxite & Alumina in 2018 included amounts relating to the implementation of the state-of-the art press filter technology for processing of bauxite residues, the new solid residue deposit area DRS2 at Alunorte and the new residue deposit area at Paragominas. In addition investments related to wastewater handling and treatment systems at Alunorte strengthening the infrastructure related to water management. Paragominas continues to replace major part of their mining fleet assets and parts of the bauxite slurry pipeline to Alunorte. The total amount for Bauxite & Alumina in 2018 also includes asset values for ARO and tax adjustments at both plants.

Investments for Primary Metal in 2018 included the capitalization of costs related to the completion of the Karmøy technology plant and Husnes upgrade and restart. Investments also included amounts related to the normal cyclical increase in the relining of smelter cells which is done every 4-7 years for established smelters.

In Metal Markets, investments in 2018 included amounts relating to the further development of our remelters in Europe and the US.

Investments for Rolled Products in 2018 included further investments in the new recycling line for used beverage cans at our smelter in Neuss, Germany and the new production line in Grevenbroich for aluminium car body sheet. Investments for Rolled Products in 2017 included expenditures for the same projects.

Investments for Extruded Solutions in 2018 included amounts relating to construction of a new high performance press line in the US, upgrading of presses and material handling systems, and investments in value add fabrication equipment. Investments in 2017 includes additions to property, plant and equipment (capital expenditures) plus long-term securities, intangible assets, long-term advances and investments in equity accounted investments, including amounts recognized in business combinations. For additional information see note 6 - Significant subsidiaries and changes to the consolidated group.

In 2018, investments for Energy consisted mainly of power plant rehabilitation and upgrades, including Suldal I and Svelgfoss power stations and Holmevatn dam upgrade. Energy also acquired 34 percent of the shares in Njordr AS and participated in a capital increase in Corvus Energy. In 2017 investments for Energy consisted mainly of power plant rehabilitation and upgrades, including the completion of the Vigeland dam upgrade and continuation of the Suldal I upgrade. Energy also acquired 25.9 percent of the shares in Corvus Energy, a Canadian company that connects lithium-ion based battery solutions and control systems.

Return on Capital Employed (RoaCE)

Hydro uses (underlying) RoaCE to measure the performance for the group as a whole and within its operating segments, both in absolute terms and comparatively from period to period. Management views this measure as providing additional understanding of the rate of return on investments over time in each of its businesses, and in the operating results of its business segments.

	Reported		Underlying	
Return on average Capital Employed (RoaCE)	**2018**	2017	**2018**	2017
Hydro	**5.9 %**	11.2 %	**6.5 %**	9.6 %
Business areas[1)]				
Bauxite & Alumina	**4.3 %**	8.5 %	**5.6 %**	8.5 %
Primary Metal	**5.4 %**	11.8 %	**4.6 %**	12.6 %
Metal Markets	**26.8 %**	18.6 %	**20.8 %**	20.9 %
Rolled Products	**1.9 %**	3.2 %	**2.4 %**	2.4 %
Extruded Solutions[2)]	**5.5 %**	13.4 %	**7.4 %**	6.6 %
Energy	**20.6 %**	17.5 %	**20.5 %**	17.5 %

1) RoaCE at business area level is calculated using 25% tax rate. For Energy, 70% tax rate is used (60% for 2017)
2) Extruded Solutions reflected as 50% equity accounted investment Q1-Q3 2017 and fully consolidated from Q4 2017

For more information; see the Alternative performance measures (APMs) section in the Appendices to the Board of Directors' report.

Risk review

121 Major risks
127 Hydro financial position and key financial exposures
128 Legal proceedings

Quick overview

Hydro is subject to a range of risks and uncertainties which may affect its business operations, financial condition and results of operations. Changes in the regulatory framework or political environment in which Hydro operates could have a material adverse effect on the company's operating results and financial position. Hydro is exposed to the risk of unfavorable macroeconomic developments. Our operations are exposed to competition from China and we may be unable to achieve or maintain the operational targets necessary to secure the competitiveness of the company's business. Major projects and acquisitions are subject to significant risk and uncertainty. Hydro's business is subject to risks which could result in disruptions to operations, damage to properties or the environment, personal injury or death. Hydro could be negatively affected by investigations, legal proceedings, material CSR incidents or major noncompliance with internal or external regulations. Hydro is exposed to the threat of cyber attacks which may disrupt its business operations, and result in reputational harm and other negative consequences. Hydro is exposed to occupational health and safety risks and incidents with the potential of causing severe damages to individuals, assets and reputation

Hydro is exposed to physical climate related risks, transition risks, risks related to the transition to a low-carbon economy and environmental risks that could have a material adverse effect on the company, our facilities, performance and the external environment.

Risk management in Hydro is based on the principle that risk evaluation and mitigation is an integral part of all business activities. A core strategy to reduce the risks related to weak economic and unfavorable market developments is the continual improvement of our business in terms of operational efficiency, cost reductions and enhanced commercial strategies. Hydro's main strategy for mitigating risk related to volatility in cash flow is to maintain a solid financial position and strong credit worthiness.

Major risks

Hydro has developed and implemented an enterprise risk management model, approved by the Board of Directors. In accordance with this model, risk factors that are relevant for Hydro's business are continuously identified, analyzed, addressed and monitored. Risk management is an integral part of our business activities, and the business areas consequently have the main responsibility for managing risks arising from their business activities. Hydro's corporate staffs establish and develop policies and procedures for managing risk, and coordinate an annual overall enterprise risk assessment. Major risks are followed up, on an ongoing basis, as part of our internal performance review structure.

Risk management in Hydro is based on the principle that risk evaluation and mitigation is an integral part of all of our business activities. A core strategy to reduce the risks related to weak economic and unfavorable market developments is the continual improvement of our competitive and cost position as well as maintaining a solid financial position and strong creditworthiness. Hydro's integrated value chain plays a key role in mitigating risk as the earnings volatility in upstream aluminium is typically higher, whereas downstream and Energy businesses generate more stable earnings over time.

Below is a description of some of the principle risks identified that may affect our business operations, reputation, financial condition, results of operations and, ultimately, our share price. Some of the mentioned risks might have a positive business impact or represent a business opportunity, whereas the focus in the description below is on downside risk. Examples are included to provide further information about risks specific to Hydro, where deemed relevant for illustrative purposes. The examples are not meant to be exhaustive. There may be additional risks unknown to Hydro at the date of this report and risks, currently considered to be immaterial, which could become material. All of the information in this report should be carefully considered by investors, in particular, the risks described in this section.

Changes in the regulatory framework or political environment in which Hydro operates could have a material adverse effect on the company

Hydro needs competitive and predictable framework conditions. Hydro is subject to a broad range of laws and regulations in the legal jurisdictions in which we operate. These laws and regulations impose stringent standards and requirements and potential liabilities regarding accidents and injuries, the construction and operation of our plants and facilities, payment of taxes, air and water pollutant emissions, the storage, treatment and discharge of waste waters, the use and handling of hazardous or toxic materials, waste disposal practices, and the remediation of environmental contamination, among other things. Changes in such laws and regulations, or changes in the way these laws and regulations are interpreted or enforced, may impact our operational licenses, and have a significant negative financial effect for Hydro. There is a risk that new taxes or tariffs are introduced, or the current tax or tariff levels will be increased in the future.

Hydro's operations include extracting and refining bauxite resources and utilizing water resources for the generation of power. Such activities have increasingly been subject to local and regional tax regimes which are separate from, and in addition to, national tax regimes such as corporate income tax.

There is a risk of increased network tariffs in Europe, due to the development of renewable energy sources and upgrades and expansions of transmission systems in Europe. Such increases could have a material impact on Hydro's cost of power, which again would have a material impact on Hydro's operating results. As an example, in January 2018 the Norwegian transmission system operator, Statnett SF proposed amendments to the Norwegian tariff model which may, if adopted, result in increased tariffs for ordinary consumers and the industry.

In Brazil, the tax system is complex and volatile, with a broad range of direct and indirect taxes levied at the federal, state and municipal levels. Over the past several years, state finances in Brazil have deteriorated, which could lead to mounting pressure to increase tax revenues.

The general income tax rate in Brazil is up to 34 percent of net income.

In Brazil, federal value added tax (PIS/COFINS) is charged on sales at a rate of 9.25 percent. Buyers are entitled to PIS/COFINS tax credits of 9.25 percent on purchases of relevant input factors (except for import of goods, which is 11.75 percent). This may be used to offset PIS/COFINS or federal income tax liabilities. Exports are exempt from PIS/COFINS, and because most of Hydro's production in Brazil is exported, we accumulate tax credits. Obtaining cash refunds of tax credits is complex and can take substantial time.

ICMS is a value added tax charged by Brazilian states on circulation of goods and services. ICMS tax rates vary from 7 to 25 percent and the tax base is the gross value of the transaction, including ICMS. Brazil has a general ICMS exemption on exports. Hydro's main operations in Brazil are located in the state of Pará, which has historically granted a deferral of the collection point for ICMS on certain goods and services. In 2015, the state of Pará granted a renewal of the ICMS deferral regime for Hydro Paragominas, Hydro Alunorte and Albras for a 15 year period. Under this regulation, such companies are not entitled to book ICMS credits and the deferred ICMS tax is not due on the exports of goods. This regime is subject to several conditions which Hydro must comply with on an ongoing basis, including contributing to development in the region and enabling sustainable growth in Pará. The ICMS deferral is subject to approval by Brazil's National Council of Finance Policy (CONFAZ). In 2018 Public Auditing Prosecutors for the State of Pará (MP-C/PA) initiated a general process before the State Accounting Court to better understand approvals, compliance and transparency of tax incentives established by the State of Pará. A discontinuation of the ICMS deferral would materially adversely affect Hydro's operating results from its Brazilian operations.

Qatalum, a joint venture which Hydro owns 50/50 with Qatar Petroleum, was established in 2007 and started its first production in December 2009. Qatalum was at the outset

granted a ten-year income tax holiday, expiring in 2020. A tax reform came into effect from 2010, which introduced a generally applicable corporate income tax rate of 10 percent. A tax rate of 35 percent applies to entities with oil and gas operations or where the activities are carried out under an agreement with the government or entities owned by the government, unless such agreement specifies another tax rate. According to the Qatalum joint venture agreement, the generally applicable tax rate will apply after 2020. It is Hydro's position that the generally applicable income tax rate, currently at 10 percent, shall apply to Qatalum after the expiry of the tax holiday.

Failure to comply with the requirements of the Brazilian National Mining Agency with respect to exploration permits and mining concessions may result in a loss of title. Third parties (including, but not limited to, indigenous persons) may dispute the right to conduct mining or exploration activities.

Environmental regulations have continued to tighten in various jurisdictions over recent years due to increased national and international environmental targets. Recent major incidents in Brazil (e.g. Samarco and Vale) have increased public awareness and pressure towards authorities and politicians to impose further and stricter regulations and monitoring of the mining industry. In this context further tightening of environmental and mining regulation is expected which may require additional resources to maintain our operations and avoid restrictions or delay in obtaining new licenses in the future

Hydro is, directly and indirectly, exposed to increasingly demanding legislation on reducing greenhouse gas emissions. Hydro has substantial smelter operations located in Europe and other regions as well as alumina refining operations located in Brazil. Aluminium production is an energy-intensive process that potentially leads to significant environmental emissions, especially emissions into the air, including CO2. An increasing number of countries have introduced, or are likely to introduce in the near future, legislation with the objective of reducing greenhouse gas emissions. Due to the Paris climate accord conference in December 2015, there is a general belief that the political framework for regulating emissions of greenhouse gases will accelerate. There is also expected to be a focus on technology improvements leading to lower emissions. A new directive on EU emission trading system (ETS) is now being discussed in the EU. The outcome could affect the price of CO2, the level of free allowances for direct emissions and the compensation regime for indirect CO2 cost.

Hydro has been an active participant in the development of international frameworks on climate change and greenhouse gas emissions supporting the establishment of a level playing field for global aluminium production. We engage in significant R&D activities focused on reducing energy consumption and improving electrolysis efficiency including anode consumption which is the main source of CO2 emissions from our smelter operations.

Hydro is engaged in a systematic dialogue with local, state and federal politicians, industry associations, non-governmental organizations and local communities regarding the regulatory challenges facing its operations. The focus of this dialogue is on Hydro's contribution to a sustainable aluminium value chain and underlines the need for competitive and predictable framework conditions for our operations. These efforts may fail or prove to be inadequate to mitigate the risks we face regarding changes in the regulatory framework or political environment in which we operate.

Hydro is exposed to a risk of unfavorable macro-economic development, including risk of prolonged periods of low aluminium and alumina prices and oversupply in the global aluminium market, in addition to changes in global trade policy framework

The aluminium industry is pro-cyclical with demand for products closely linked to economic development. This results in significant volatility in the market prices for aluminium products in periods of macroeconomic uncertainty or recession. Macroeconomic development also drives changes in currency values, which have a significant effect on Hydro's cost and competitive position.

In the past decade global aluminium oversupply and high global stock levels, have had a dampening effect on LME prices.

Market conditions have improved since late 2016, and the improvement continued into 2018 supported by strong global economic performance, not least in US and European markets, and a reduction in Chinese production growth following supply side reforms and environmental shutdowns. In the latter part of 2018 uncertainty has increased regarding continued strong growth. In addition, geopolitical and macroeconomic uncertainty continues. In the event that this leads to slower economic growth, demand in key downstream markets would also be affected.

Aluminium products are traded globally. Development in global trade flows, trade framework, tariffs and anti-dumping legislation are therefore of importance. Global trade framework and protectionism are moving higher on the agenda, not least through the role of WTO, the new EU legislation on dumping products, Brexit and the agenda of the current US administration.

Following the investigation under Section 232 of the Trade Expansion Act of 1962 on steel and aluminium, on March 8, 2018, a 10 percentage tariff on imports to the US of primary aluminium and most fabricated products was announced, effective March 23, 2018. Exemptions were made for Australia (no tariff) and Argentina (accepted production quota). The objective of the tariff is to enable US primary aluminium production to reach an average capacity utilization of 80 percent, an increase from the current 48 percent (restart and/or ramp-up of up to five possible smelters). Even with smelter restarts, the US remains a major deficit region for aluminium, and will need to attract metal imports. So far, the tariff has been transferred to the consumer through a parallel increase in the Mid-West premium. However, the indirect long term effects of the tariffs on aluminium in the US or other markets remain uncertain and could have a negative impact on Hydro's business.

The majority of Hydro's upstream, Bauxite, Alumina and Primary aluminium capacity, is located in countries where fluctuations in commodity prices are reflected in their exchange rates such as Norway, Brazil, Canada and Australia.

There is a fairly strong historic correlation supporting this relationship, however with a volatility around the trend. If our main cost currencies strengthen going forward, this will increase our operating cost and may weaken our global competitive position relative to production from other regions.

Hydro's core strategy to reduce the risks related to unfavorable economic and market developments is the continuous improvement of our business in terms of operational efficiency, cost reductions, enhanced commercial strategies across the value chain and diversification of business across markets. These efforts help us to partly offset the effects of low market prices and raw material cost increases. Hydro is engaged in a systematic dialogue with politicians and trade and industry associations regarding the global trade framework.

In order to secure financial liquidity, we concentrate on maintaining a strong balance sheet, sufficient undrawn credit facilities, capital discipline and a continued focus on working capital. However, the cost reductions and improvements that we target may prove to be insufficient to achieve a sustainable level of profitability for our business operations in the event of an extended period of low aluminium prices, significant strengthening of our local currencies, relatively high costs for key raw materials, or weak market demand.

Hydro could be negatively affected by material CSR incidents, investigations, legal proceedings, or major non-compliance with laws and regulations

Hydro could be negatively affected by criminal or civil proceedings or investigations related to, but not limited to product liability, environment, health and safety, alleged anti-competitive or corrupt practices or commercial disputes. Violation of applicable laws and regulations could result in substantial fines or penalties, costs of corrective work, the suspension or shutdown of our operations and substantial damage to the company's reputation.

In addition, Hydro is exposed to actual or perceived failures to behave in a socially responsible manner and to manage social impacts, particularly related to human rights breaches. Such failures could result in significant, negative publicity and potential serious harm to Hydro's reputation. Reactions by key stakeholders and communities in which Hydro operates could also interfere or interrupt the operations of our business.

In order to manage social risks and opportunities, Hydro has several directives, policies and procedures setting out requirements and guiding implementation throughout the company. The CSR strategy defines priorities and overall goals.

Hydro is also exposed to social and human rights risks in the supply chain, joint ventures, and in other parts of the Brazil operations (bauxite mining and transportation).

Hydro Extrusion Portland, Inc. (formerly Sapa Profiles, Inc.) (SPI), a Portland, Oregon-based indirect subsidiary of Hydro Extruded Solutions AS (formerly Sapa AS) (Hydro) is under investigation by the United States Department of Justice (DOJ) Civil and Criminal Divisions regarding certain aluminum extrusions that SPI manufactured from 1996 to 2015, including extrusions that were delivered to a supplier to NASA. SPI is cooperating fully in these investigations, which are currently ongoing. In the ongoing discussions with DOJ, an agreement in principle has been reached, requiring Hydro to pay an amount of around NOK 400 million subject to further terms that still have to be agreed in order to resolve the investigations. As part of the share purchase agreement between Hydro and Orkla ASA, the parties have agreed that Orkla ASA shall indemnify Hydro for 50 percent of any liability related to these investigations.

Hydro's Board-sanctioned Code of Conduct requires adherence with laws and regulations as well as internal steering documents and is systematically implemented and maintained through our compliance system. The Hydro compliance system consists of numerous measures to reduce the risk of non-compliance. The content of such measures differs between relevant compliance risk areas, but can be grouped into four categories: preventing, detecting, reporting and responding. Hydro's global operations entails a wide array of compliance risks. Mitigation of such risks, both financial and non-financial, apply the same system. The compliance risks facing Hydro is continuously monitored and evaluated as part of the Enterprise Risk Management process. Prioritized risk areas are HSE, Financial reporting, anti-corruption, data privacy, the EU General Data Protection Regulation and competition law. Hydro's supply chain is included in the scope of risk mitigation, for instance by procedures for integrity risk management of business partners. Hydro is active in, and has a long tradition for, conducting dialogue with the relevant parties affected by our activities. These include unions, works councils, customers, suppliers, business partners, local authorities and non-governmental organizations. The above-mentioned controls and initiatives may, however, be insufficient to mitigate these risks.

Our business is exposed to competition from China, which could have a significant negative impact on market prices and demand for our products

China is the world's largest consumer and producer of aluminium, with more than half of the global production capacity. As a result, changes and developments in aluminium supply and demand in China have a significant impact on global market fundamentals.

Hydro is exposed to the development in China broadly on three levels; 1) although the explicit effect on Hydro is limited, China's increased demand for imported bauxite and the fulfillment of its requirements affect global bauxite prices, 2) the risk of Chinese surplus aluminium production (i.e. increased capacity utilization) negatively affects prices outside China and 3) increases in Chinese exports of aluminium semis and fabricated products affect primary demand and demand for semi-fabricated products in the importing regions such as Europe and the US (Hydro core markets) and Asia (Hydro's export markets).

Chinese alumina refineries and, consequently, aluminium smelters are dependent on imports of bauxite. Imported bauxite has traditionally been sourced from the Pacific region, with Australia, Indonesia and Malaysia as major suppliers. Following export restrictions imposed in Indonesia and Malaysia, increasing bauxite volumes have become available from Guinea to supply Chinese demand since 2016. While the increased export volumes from Guinea have removed the risk of a bauxite supply shortage for China,

sourcing from Guinea increases the freight distance and relative costs compared with Pacific supply sources.

In past years, China has followed a policy of promoting a balanced internal market for primary aluminium including incentives to discourage the export of primary metal while encouraging domestic production of more labor-intensive semi-fabricated and finished aluminium products. Over the last years, overcapacity in China led to a continued rise in exports in the form of semi-fabricated products. Such exports affect metal prices outside China. Exports from China have varied considerably, driven, amongst other factors, by periodic arbitrage opportunities between Chinese and international metal prices. Exports have increased in volume over the last years, with a further hike in 2018. The Chinese central authorities have for several years voiced their concerns regarding the market surplus and inadequate implementation of regulations to discourage further smelter construction. Since 2017, supply-side reform has been enforced across several industries, including aluminium. The target was smelter capacity deemed to be illegal, i.e. not possessing all necessary authorizations. An estimated 3 million tons of capacity has subsequently been closed down. An increase in the oversupply of primary metal in China may lead to higher export of rolled and extruded downstream products, affecting demand for Hydro’s metal products.

Our dedicated improvement programs are the key strategies aimed at maintaining and improving our relative position on the industry cost curve. This is further supported by our focus on producing value-added products and exposure to different parts of the value chain and product segments. However, the targeted cost reductions and improvements may prove to be insufficient to achieve a sustainable level of profitability for our business operations in the event of an extended period of low aluminium prices, stronger local currencies, relatively high costs for key raw materials or weak market demand, or an extended period of significantly increased aluminium products exports from China.

Hydro may fail to realize sufficient value in the execution and implementation of major projects or business acquisitions

Hydro makes significant capital investments and acquisitions as part of its business development and may not be able to realize the benefits expected from such transactions and projects. Major projects and acquisitions are subject to significant risk, and uncertainty in making the investment evaluation, project execution and subsequent operations. Acquisitions may also contain significant unidentified risks and liabilities, which could have a material adverse effect on our profits and financial position.

Hydro completed the acquisition of the remaining 50 percent of Sapa AS (“Sapa”) from Orkla ASA in October 2017. The integration of Sapa into Hydro's existing business may expose Hydro to additional risks, reputational damage, costs and financial losses.

Further integration strategies were implemented during 2018, including rebranding, relocation, synergy execution and strategic innovation processes. Overall, integration activities are on track.

Hydro built the Karmøy Technology Pilot to operationalize "next generation" cell and smelter technology, which was developed together with key suppliers and started production in January 2018. We may fail to achieve the expected technical enhancements and benefits for the existing smelter portfolio resulting from the new technology.

Hydro has made a final build decision to invest NOK 1.4 billion at the aluminium plant in Husnes, Norway, to upgrade and start up the plant’s second production line, which will double the aluminium production of the plant and create 90 more jobs. As part of the restart of the production line, which was shut down in 2009, Hydro will introduce new technology elements that are expected to lead to better performance at the plant. The line is expected to begin operations in the first half of 2020. We may fail to fully achieve the expected enhancements and benefits of the new technology elements.

Technical issues caused delays in the ramp up phase of both the Automotive line 3 in Germany and the new recycling line for used beverage cans (UBC). Hydro is a major supplier of aluminium sheet and coil to the European automotive market for interior and exterior vehicle body parts, chassis and component applications. The new Automotive line 3 is built to increase our nominal body-in-white capacity to 200,000 mt. The UBC line will expand Hydro's recycling capabilities and enhance sourcing of material for the Rolled Products system. Further modifications and investments were undertaken in 2018 to enable ramp up to full production at nameplate capacity.

Hydro has made major investments in emerging and transitioning markets and future investments may occur or may be more likely to occur in countries characterized as emerging and transitioning markets. Investing in emerging and transitioning markets is demanding in terms of organizational capacity, cultural understanding, effort, knowledge and experience, and Hydro may not be capable of succeeding in expanding its business in such markets.

At the end of 2018, around half of our smelter capacity was owned through interests in joint ventures and partly-owned subsidiaries. Investments as a minority partner in jointly owned entities reduces Hydro's ability to manage and control this part of its portfolio. Investments in jointly owned entities, including those in which we hold a majority position, also entail the risk of diverging interests between business partners, which could impede Hydro's ability to realize its objectives, repatriate funds from such entities and to achieve full compliance with Hydro's standards.

In order to mitigate the risk associated with the execution and implementation of major projects, all capital projects in Hydro, including M&A projects, are subject to a formal, comprehensive, internal review process prior to making any commitment. Hydro is continuously working to improve our project evaluation and execution processes. This includes improving risk assessment, methodologies and clarifying and refining minimum return requirements for different parts of the value chain. These measures, may however, prove to be insufficient to mitigate the risks we face in the execution and implementation of major projects or business combinations.

Hydro could be adversely affected by disruptions or major incidents in our operations and may not be able to maintain sufficient insurance to cover all risks related to its operations

Hydro's business is subject to a number of risks and hazards which could result in disruptions to operations, damage to properties and production facilities, personal injury or death, environmental damages, monetary losses and possible legal liability. Some of our operations are located in close proximity to sizable communities. Major accidents could result in substantial claims, fines or significant damage to Hydro's reputation. Breakdown of equipment, power failures or other events leading to production interruptions in our plants could have a material adverse effect on our financial results and cash flows.

In 2013, power outages at our Alunorte alumina refinery resulted in significant production disruptions, having a negative impact on operating results for the year. In 2016, power outage at the Årdal smelter caused a partial loss of production, some damage to equipment, in addition to temporarily increasing emissions and the cost position of the plant. Hydro obtains its bauxite from two main sources, the majority is via a 244 km pipeline from Paragominas to Alunorte, the remainder transported by vessel from MRN to Alunorte, any major disruption to this supply of bauxite to Alunorte would have material adverse effects on our operations. In 2018, The extreme rainfall and flooding in Brazil resulted in the Brazilian authorities forcing Hydro to reduce Alunorte's production to 50 percent of its capacity, this had a significant negative effect on Hydro's operations and financial results for the year.

In addition, the potential physical impacts of climate change on our facilities and operations is highly uncertain and may cause disruptions in our operations. Effects of climate changes may include changes in rainfall patterns, flooding, shortages of water or other natural resources, changing sea levels, changing storm patterns and intensities, and changing temperature levels.

In order to reduce the risk of disruptions to our operations and potential resulting consequences, we perform regular risk assessments and engage in comprehensive emergency preparedness training for key managers and employees. The scope of risk assessments has been expanded over time. We have also focused on increasing our resilience against power outages including automation of substations and power generating facilities as well as improved back-up facilities. Although Hydro maintains insurance to protect against certain risks in such amounts as it considers reasonable and in accordance with market practice, its insurance may not cover all the potential risks associated with Hydro's operations.

Hydro is exposed to the threat of cyber-attacks which may disrupt its business operations, and result in reputational harm and other negative consequences

Hydro's IS/IT infrastructure is a critical element in all parts of our operations, ranging from process control systems at production sites, central personnel databases to systems for external financial reporting. Cyber-crime is increasing globally, and Hydro is exposed to threats to the integrity, availability and confidentiality of our systems. Threats may include attempts to access information, computer viruses, denial of service and other digital security breaches.

Hydro has launched several initiatives to increase the robustness of its IS/IT infrastructure against malicious attacks by improving system infrastructure and educating employees to develop and improve secure work processes and routines. However, these initiatives may fail to deliver the expected results or prove to be inadequate to prevent cyber attacks or security breaches that manipulate or improperly use our systems or networks.

Hydro may be unable to achieve or maintain the operational targets necessary to secure the competitiveness of our business

Hydro operates in a highly competitive market where operational excellence in all parts of the value chain is required to reach and maintain a competitive position. This includes each step of the business process from the sourcing of raw materials, to physical operations of each plant, and the commercial optimization of the product portfolio. Failure to create an environment and competence which enables the organization to continuously achieve increased operational targets will reduce the competitiveness of our business and result in the failure to meet our long-term financial targets.

Operational performance may also be inhibited by other factors such as the inability to develop necessary technical solutions; changes or variations in geologic conditions, environmental hazards, weather, climate change or natural phenomena; mining and processing equipment failures and unexpected maintenance problems and interruptions. Driving improvements and performance is heavily dependent on achieving sufficient capacity and skill in the workforce. Substantial parts of the Brazilian operation are located in remote areas where it has been difficult to attract and retain the competence required to achieve our performance goals for these operations. In addition, Hydro's bauxite reserves in Brazil and the estimated quantities of bauxite that Hydro expects can be economically mined and processed are subject to material uncertainties.

In February 2018 the region of Barcarena in northern Brazil suffered from flooding following two days of extreme rainfall. The areas flooded included Hydro's Alunorte alumina refinery. Brazilian authorities and local communities were concerned that flooding might have led to harmful spills into the surrounding areas. The authorities ordered several measures against Alunorte while reviewing the situation. The measures restricted the production at the refinery to 50 percent of its capacity. Consequently, Alunorte's primary bauxite source Paragominas and Hydro's part-owned subsidiary Albras aluminium plant, both in the state of Pará, reduced their production by 50 percent.

The operational performance of Hydro's production assets has been gradually improved over the past several years through the implementation of defined improvement programs such as the "Better" program. Unrelenting focus on continuous improvement is necessary for Hydro to maintain and further improve the competitiveness of our portfolio.

Due to the situation in Brazil, Hydro's "Better" improvement program did not reach the 2018 target of NOK 500 million. The "Better Primary Metal" improvement program did not reach its target for 2018 mainly due to the production curtailment at Albras and alumina quality issues at the fully owned smelters. The curtailment and quality issues are a direct result of reduced availability of alumina from Alunorte.

Another improvement initiative, Fit4Future, aims at step-change improvements to lift staff value creation and lower costs. It is divided into three main focus areas: strategic fit, differentiation and simplification.

Our operations, and in particular our aluminium smelters, are dependent upon large volumes of energy. Securing new, competitive energy sources for our business is a key operational target and our business could be materially adversely affected by the inability to replace, on competitive terms, our long-term energy supply contracts when they expire, or our own electricity production, to the extent that concessions revert to the Norwegian state. Hydro has, over the last years, secured several long term power supply contracts in Norway. In 2016, an important regulatory change was implemented in Norway that allows for private ownership to waterfalls through companies with liability, often referred to as industrial ownership or ANS/DA, enabling further progress on Hydro's work to re-structure ownership and protect the value of our power assets.

A cornerstone in our work to reach operational targets and secure the competitiveness of our operations is the use of standardized Business Systems to structure and formalize continuous improvement work. Improvements are also supported by benchmarking to identify and implement best practices between our business areas. We are also engaged in a number of initiatives to identify and secure competitive energy supplies for our operations, and are actively involved in promoting a sustainable energy policy in the regions where we operate. However, we may not succeed in achieving or maintaining the operational targets necessary to secure our competitiveness. We may also fail to identify and secure sufficient competitive energy supplies for our operations.

Occupational health and safety, and security risks
Hydro is exposed to occupational health and safety risks and incidents with the potential of causing severe damages to individuals, assets and reputation.

Hydro's business is subject to a broad range of risks and hazards that could result in major health, safety and security incidents. If not well managed, these incidents could cause fatalities, severe injuries to individuals, adverse health effects, damage to assets or the environment. This may result in significant short- and long-term human suffering, financial and legal liability and/or loss of reputation.

Based on Hydro's processes and locations, examples of such incidents and risks include, but are not limited to, molten metal explosion, mobile equipment interaction and transportation, working at height, energy isolation, equipment failure, major fires, occupational illness, chemical spills etc.

There has been a strong drive to improve safety performance throughout the organization, and more than 50 percent of all operational sites were total recordable injury free during 2018. However, most business areas saw a deterioration in total recordable injury performance, and increasing high risk incidents.

Internal investigations are routinely initiated after fatal accidents or serious incidents to identify the root causes and avoid recurrences by subsequent implementation of appropriate corrective and preventive actions. Our approach to improve our occupational health, safety and security performance is based on risk management, leadership qualities and shop floor engagement. Hydro has implemented several processes to eliminate serious injury including critical control management systems, and the development of fatality prevention protocols that emphasize seven topics: energy isolation, fall prevention, mobile equipment, overhead crane, confined space entry, molten metal safety and contractor management These processes are aimed at both raising standards and understanding of risks at Hydro sites. This process aims to utilize the full engagement of all employees and others who work with us and an increased leadership presence on the shop floor to bring about a step change in reducing serious injuries.

These measures may be insufficient to reduce the risks associated with major occupational health, safety and security incidents.

Climate change and environmental risks
Hydro is exposed to physical climate related risks, transition risks, risks related to the transition to a low-carbon economy and environmental risks that could have a material adverse effect on the company, our facilities, performance and the external environment.

Hydro's operations and facilities are subject to risks arising from physical climate change, that may impact Hydro's operations. Effects of climate change include changes in rainfall patterns, flooding, shortages of water or other natural resources, changing sea levels, changing storm patterns and intensities, and changing temperature levels. The changes may be acute and/or chronic. The risks from climate change could lead to operational and environmental incidents within our operations, for example by flooding of containment basins, increasing temperatures leading to increased emissions from processes etc.) that must be considered in our business strategy.

Operational performance, and the occurrence of environmental incidents, is also affected by other factors than physical climate change such as the lack of suitable technological solutions; changes or variations in hydrological and geological conditions; environmental hazards; extreme weather, and other natural phenomena; mining and processing equipment failures and unexpected maintenance problems and interruptions and critical failures to infrastructure integrity that can lead to environmental spills and danger to surrounding communities.

In addition to such environmental incidents, there are risks related to the effects of known and unknown historical and current emissions to air, water and soil. These may have legal, financial and reputational consequences and require mitigating actions.

There are risks associated to the transition to a low-carbon economy. Hydro is, directly and indirectly, exposed to increasingly demanding legislation on reducing greenhouse gas emissions, and associated regulatory risk. Hydro's risk exposure, mainly relates to, but is not limited to, the cost of CO2 and stricter emissions abatement requirements, please see "Changes in the regulatory framework and political environment" in this section.

The transition to a low-carbon economy has associated technology and market risks. Hydro's technology may not be able to meet the abatement and emissions requirements set by regulatory bodies: Increased concern over climate change may lead to changes in consumer behavior and increased demand for low-emission products.

In order to reduce the risks for our operations and potential consequences related to climate change, Hydro performs extensive risk assessments of both physical and transition risks. The scope of the risk assessment is being expanded over time and is based on modelling future weather patterns and their impact on Hydro's facilities based on existing climate models and scenarios from the IPCC, and scenarios for policy and legal risk, technology, market and reputation risk. Based on this, we are developing a new climate strategy.

A similar approach is also taken for identifying other environmental risks related to our operations, through Environmental Impact Assessments and continuous review of monitoring procedures, control systems and the application of appropriate management procedures.

Hydro has been an active participant in the development of international frameworks on climate change and greenhouse gas emissions supporting the establishment of a level playing field for global aluminium production. We engage in significant R&D activities focused on reducing energy consumption and improving electrolysis efficiency including anode consumption which is the main source of CO2 emissions from our smelter operations.

Hydro actively engages with academia, research institutions and industry associations on climate change and other environmental topics, such as the Biodiversity Research Consortium and the Aluminium Stewardship Initiative.

These efforts may fail or prove to be inadequate to mitigate the climate change and other environmental risks we are facing.

Hydro financial position and key financial exposures

Our main strategy for mitigating risk related to volatility in cash flow is to maintain a strong balance sheet. Specific key financial ratio levels over the business cycle are targeted, reflecting a solid financial position and investment grade credit rating. These include an Adjusted net cash (debt) to equity ratio below 0.55 and a ratio of Funds from operations to Adjusted net cash (debt) above a level of 0.40. Maintaining investment grade credit rating can secure access to capital markets at attractive terms and gives other important benefits.

Hydro's liquidity position at the end of 2018, with a cash position of NOK 6.0 billion, is considered solid. Hydro also has a credit facility of USD 1.7 billion which expires in November 2020. The facility was undrawn per year-end 2018. Hydro continues to focus on cash generation and credit risk throughout the organization.

Key financial exposures

Hydro's operating results are primarily affected by price developments of our main products, raw materials, margin developments and to fluctuations in the most significant currencies for Hydro, which are the USD, NOK, EUR and BRL.

Hydro's main risk management strategy for upstream operations is to accept exposure to price and exchange rate movements, while at the same time focusing on reducing the average cost position of production assets. In certain circumstances, derivatives may be used to hedge certain revenue and cost exposures. Long term, the only true hedge is cost competitive operations, and the only long-term hedge against market volatility is to maintain a low-cost asset base.

Downstream and other margin-based operations are to a certain extent hedged to protect processing and manufacturing margins against price fluctuations. An operational hedging system has been established to protect commercial contracts from aluminium price fluctuations.

To mitigate the impact of exchange rate fluctuations, long-term debt is mainly maintained in currencies reflecting underlying exposures and cash generation, while considering attractiveness in main financial markets. Hydro may also use foreign currency swaps and forward currency contracts to reduce effects of fluctuations in the US dollar and other exchange rates.

The table below show sensitivities regarding aluminium prices and foreign currency fluctuations for 2018. The table illustrates the sensitivity of earnings, before tax, to changes in these factors and is provided to supplement the sensitivity analysis required by IFRS, included in note 13 to the Consolidated Financial Statements. These sensitivities do not consider revaluation effects of derivative instruments, which may influence earnings.

Sensitivities with 100% production

Commodity price sensitivity +10%

NOK Million	UEBIT
Hydro Group	
Aluminium	3,900

Currency sensitivities +10%

NOK Million	USD	BRL	EUR
Sustainable effect			
EBIT			(250)
One-off reevaluation effect			
Financial items			(2,460)

Annual sensitivities based on LME USD 2 040 per mt, USDNOK 8.40, BRLNOK 2.20, EURNOK 9.60.

Sensitivities with 50% production*

Commodity price sensitivity +10%

NOK Million	UEBIT
Hydro Group	
Aluminium	3,500

Currency sensitivities +10%

NOK Million	USD	BRL	EUR
Sustainable effect			
EBIT	2,690	(1,060)	(240)
One-off reevaluation effect			
Financial items	20	700	(2,460)

*Simplified sensitivities based on full year 50% curtailment of Alunorte, Albras and Paragominas

Annual sensitivities based on LME USD 2 040 per mt, USDNOK 8.40, BRLNOK 2.20, EURNOK 9.60.

Legal proceedings

Hydro Extrusion Portland, Inc. (formerly Sapa Profiles, Inc.) (SPI), a Portland, Oregon-based indirect subsidiary of Hydro Extruded Solutions AS (formerly Sapa AS) (Hydro) is under investigation by the United States Department of Justice (DOJ) Civil and Criminal Divisions regarding certain aluminum extrusions that SPI manufactured from 1996 to 2015, including extrusions that were delivered to a supplier to NASA. SPI is cooperating fully in these investigations, which are currently ongoing. In the ongoing discussions with DOJ, an agreement in principle has been reached, requiring Hydro to pay an amount of around NOK 400 million subject to further terms that still have to be agreed in order to resolve the investigations. As part of the share purchase agreement between Hydro and Orkla ASA, the parties have agreed that Orkla ASA shall indemnify Hydro for 50 percent of any liability related to these investigations.

Authorities and non-governmental organizations have filed several lawsuits related to the Alunorte situation, claiming a combination of mitigating actions and financial compensation. The argumentation, cost calculation and legal basis for these claims is highly uncertain. At the time of authorising this report, production embargoes on Alunorte as well as embargoes on DRS2 by the Federal Court, both civil and criminal, remains in force.

The Group is engaged in a large number of legal proceedings and disputes around the world. As of the date of this Annual Report, based on the Company’s current assessment, neither the Company nor any other company in the Group are, nor have during the course of the last 12 months, except for the Sapa dispute described above and the economic consequences of the Alunorte embargos, been involved in any governmental, legal or arbitration proceedings, which may have, or have had in the recent past significant effects on the Company and/or the Group's financial position or profitability.

Shareholder information

130 Introduction
130 Dividend policy
130 Buyback of shares
130 Funding and credit quality
130 Major shareholders and voting rights
132 Key figures for the Hydro share
133 Information from Hydro
133 Annual General Meeting
133 Change of address
133 Financial calendar 2019

Quick overview

Hydro's share price closed at NOK 39.21 at the end of 2018. The return ex. dividend for 2018 was negative with NOK 23.1, or negative 37 percent.

Hydro's Board of Directors proposes to pay a dividend of NOK 1.25 per share for 2018, for approval by the Annual General Meeting on May 7, 2019, reflecting Hydro's robust financial position, taking into account a demanding year for the company and the volatility in the aluminium industry.

There were 2,068,998,276 issued shares at the end of 2018. A total of 1.7 billion Hydro shares were traded on the Oslo Stock Exchange during 2018 at a value of NOK 80 billion, making Hydro the second most traded company on the OSE. The average daily trading volume for Hydro shares on the OSE during 2018 was 6.6 million shares.

Hydro's shares are listed on the Oslo Stock Exchange, while our American Depositary Shares (ADSs) trade on OTCQX International in the US, the premium over-the-counter market tier.

Introduction

Hydro's share price closed at NOK 39.21 at the end of 2018. The return ex. dividend for 2018 was negative with NOK 23.1, or negative 37 percent. Hydro's Board of Directors proposes to pay a dividend of NOK 1.25 per share for 2018, for approval by the Annual General Meeting on May 7, 2019, reflecting Hydro’s robust financial position, taking into account a demanding year for the company and the volatility in the aluminium industry. The proposed payment represents a 60 percent pay-out ratio of reported net income for the year and demonstrates the company's commitment to provide a competitive cash return to shareholders. Hydro has a dividend policy of 40 percent payout ratio of reported net income over the cycle with NOK 1.25 per share considered as floor.

There were 2,068,998,276 issued shares at the end of 2018. A total of 1.7 billion Hydro shares were traded on the Oslo Stock Exchange during 2018 at a value of NOK 80 billion, making Hydro the second most traded company on the OSE. The average daily trading volume for Hydro shares on the OSE during 2018 was 6.6 million shares.

Hydro's shares are listed on the Oslo Stock Exchange, while our American Depositary Shares (ADSs) trade on OTCQX International in the US, the premium over-the-counter market tier.

Dividend policy

Long-term return to shareholders should reflect the financial value created by Hydro over time. Total shareholder return consists of dividends and share price development. Over time, value creation should be reflected to a greater extent by share price development rather than by dividends. Hydro's policy is in the long term to pay out, on average, 40 percent of net income as ordinary dividend over the cycle to our shareholders. The dividend policy has a floor of NOK 1.25 per share. In setting the dividend for a specific year, Hydro will take into consideration expected earnings, future investment opportunities, the outlook for world commodity markets and our financial position. Share buybacks or extraordinary dividends may supplement ordinary dividends during periods of strong financials, due consideration being given to the commodity cycle and capital requirements for future growth. The total payout should reflect Hydro's aim to provide its shareholders with competitive returns benchmarked against alternative investments in comparable companies.

Hydro's Board of Directors normally proposes a dividend per share in connection with the publication of our fourth quarter results. The Annual General Meeting then considers this proposal in May each year, and the approved dividend is subsequently paid to shareholders in May or June. Hydro pays dividends once each year. For non-Norwegian shareholders, Norwegian tax will be deducted at source in accordance with the current regulations.

Buyback of shares

In periods when earnings are high, Hydro may consider buying back shares in addition to ordinary or extraordinary dividend payments. This consideration will be made in the light of alternative investment opportunities and our financial situation. In circumstances when share buybacks are relevant, our Board of Directors proposes buyback authorizations to be considered and approved by the Annual General Meeting. Authorizations are granted for a specific time period and for a specific share price interval during which share buybacks can be made.

Funding and credit quality

Maintaining a strong financial position and an investment grade credit rating are viewed as important risk mitigating factors, supporting Hydro's possibilities for strategic development of its businesses. Access to external financial resources is required in order to maximize value creation over time, balanced with acceptable risk exposure. To secure access to debt capital on attractive terms, we aim at maintaining an investment grade credit rating from the leading rating agencies.

Contributing toward this ambition to retain our credit rating, we intend to keep our funds from operations at a level equal to or above 40 percent of adjusted net debt, in addition to adjusted net debt at a ratio not higher than 55 percent of equity capital over time. In calculating these ratios, we include pension obligations, operating lease commitments, share of net debt in equity accounted investments and certain other debt-like items. For a discussion of these adjustments see Note 39 - Capital Management in the Financial Statements section of this report.

Major shareholders and voting rights

As of December 31, 2018, Hydro had 51,666 registered shareholders as per the Norwegian Central Securities Depository (VPS). The Ministry of Trade, Industry and Fisheries of Norway was the largest of these with a shareholding of 34.26 percent of the total number of ordinary shares authorized and issued, and 34.64 percent of the total shares outstanding. As of the same date, The Government Pension Fund - Norway (Folketrygdfondet) owned 6.73 percent of the total number of ordinary shares issued and 6.81 percent of the total shares outstanding. There are no different voting rights associated with the ordinary shares held by the state.

The Norwegian Ministry of Trade, Industry and Fisheries represents the Norwegian government in exercising the state's voting rights. The state has never taken an active role in the day-to-day management of Hydro and has for several decades not disposed of any of the ordinary shares owned by it, except when participating in the share buyback programs.

Geographical ownership distribution of shares

JPMorgan Chase & Co, as depositary of the ADSs, through its nominee company, Morgan Guaranty Trust Company, held interests in 9,170,563 ordinary shares, or 0.4 percent of the outstanding ordinary shares as of December 31, 2018. The interests are on behalf of 299 registered holders of ADSs

All shares carry one vote. It is, however, a requirement of Norwegian legislation that a shareholder can only vote and have preferential subscription rights for shares registered in their name. Shares registered with a nominee account must be re-registered in the Norwegian Central Securities Depositary, Verdipapirsentralen (VPS), before the Annual General Meeting in order to obtain voting rights. This requirement also applies to our US-traded ADSs.

Hydro cannot guarantee that beneficial shareholders will receive the notice for a general meeting in time to instruct their nominees to affect a re-registration of their shares. Hydro is organized under the laws of the Kingdom of Norway. It may be difficult for investors to effect service of process outside Norway upon Hydro or its directors and executive officers, or to enforce against Hydro or its directors and executive officers judgments obtained in other jurisdictions. Norwegian courts are unlikely to apply other than Norwegian law when deciding on civil liability claims under securities laws.

Hydro's 20 largest shareholders, December 31, 2018

Shareholder	Number of shares	Ownership interest
Ministry of Trade, Industry and Fisheries	708,865,253	34.3 %
Folketrygdfondet	139,282,717	6.7 %
Capital World Investors	78,125,871	3.8 %
Schroder Investment Management Ltd. (SIM)	60,666,176	2.9 %
DNB Asset Management AS	42,461,846	2.1 %
The Vanguard Group, Inc.	39,985,237	1.9 %
BlackRock Institutional Trust Company, N.A.	37,948,664	1.8 %
Storebrand Kapitalforvaltning AS	28,356,966	1.4 %
KLP Forsikring	27,003,302	1.3 %
Danske Capital (Norway)	26,720,822	1.3 %
JPMorgan Asset Management U.K. Limited	24,840,602	1.2 %
SAFE Investment Company Limited	24,561,718	1.2 %
AllianceBernstein L.P.	21,642,565	1.0 %
Eurizon Capital SGR S.p.A.	17,832,356	0.9 %
State Street Global Advisors (US)	17,531,855	0.8 %
Earnest Partners, LLC	14,436,219	0.7 %
Nordea Funds Oy	12,149,184	0.6 %
Legal & General Investment Management Ltd.	12,053,186	0.6 %
Dimensional Fund Advisors, L.P.	10,781,102	0.5 %
Wellington Management Company, LLP	9,673,658	0.5 %

Source: The data is provided by Nasdaq through the Share register Analyses services. The data is obtained through the analysis of beneficial ownership and fund manager information provided in replies to disclosure of ownership notices issued to all custodians on the Hydro share register. Whilst every reasonable effort is made to verify all data, Nasdaq can not guarantee the accuracy of the analysis. For a list of the largest shareholders as of December 31, 2018, from the Norwegian Central Securities Depositary (VPS), see Note 13 in Notes to the financial statements Norsk Hydro ASA. Due to lending of shares, an investor's holdings registered in its VPS account may vary.

Key figures for the Hydro share

	2018	2017	2016	2015	2014
Share price high, Oslo (NOK)	**62.70**	64.15	43.05	47.68	42.90
Share price low, Oslo (NOK)	**38.69**	41.03	26.00	26.54	26.87
Share price average, Oslo (NOK)	**48.61**	52.27	34.31	35.58	34.03
Share price year-end, Oslo (NOK)	**39.21**	62.35	41.30	33.13	42.44
Earnings per share (EPS) (NOK)	**2.08**	4.30	3.13	0.99	0.39
Dividend per share (NOK)[1]	**1.25**	1.75	1.25	1.00	1.00
Pay-out ratio[2]	**60 %**	41 %	40 %	101 %	256 %
Dividend growth	**(29) %**	40 %	25 %	-	33 %
Pay-out ratio five year average[3]	**57%**	70%	133%	110%	95%
Adjusted net cash (debt) including EAI / Equity[4]	**0.32**	0.26	0.14	0.20	0.26
Credit rating, Standard & Poor's	**BBB**	BBB	BBB	BBB	BBB
Credit rating, Moody's	**Baa2**	Baa2	Baa2	Baa2	Baa2
Non-Norwegian ownership, year-end	**41 %**	47 %	45 %	40 %	35 %
Outstanding shares, average	**2,045,796,971**	2,044,105,404	2,042,481,930	2,041,000,645	2,039,501,461
Outstanding shares, year-end	**2,046,302,797**	2,044,697,348	2,042,894,116	2,041,587,692	2,039,832,288

1) 2018 dividend per share proposed by Board of Directors, dependent on approval from the Annual General Meeting May 7, 2019.
2) Dividend per share divided by earnings per share from continuing operations.
3) Dividend per share divided by earnings per share from continuing operations for last five years.
4) See note 39-Capital management in the Consolidated Financial Statements.

Information from Hydro

Communicating with the stock market is given high priority, and Hydro aims to maintain an open dialogue with market participants. Our objective is to provide sufficient information on a timely basis to all market participants to ensure a fair valuation of our shares. Information that is considered price sensitive is communicated by news releases and stock exchange announcements. We host regular meetings for investors in Europe and the US. The major brokers in Oslo and London publish equity research reports on Hydro. All information about Hydro is published on our website: www.hydro.com

Our annual and quarterly reports are available on www.hydro.com, and our latest annual reports can also be ordered in printed versions from the website.

Two weeks before the announcement of quarterly results, Hydro practices a "silent period", meaning that contact with external analysts, investors and journalists is limited. This is done to minimize the risk of information leaks and potentially unequal information in the marketplace.

Annual General Meeting

The Annual General Meeting will be held at the company's offices at Drammensveien 260, Oslo, Norway, on Tuesday, May 7, 2019, at 14:00 CET. Shareholders who wish to attend are asked to inform the registrar by 16:00 CET on Friday, May 3:

DNB Bank ASA
Registrar's Department
P.O.Box 1600 Sentrum
N-0021 Oslo, Norway

You may also register electronically on our website www.hydro.com/register or via VPS Investor Services. Any shareholder may appoint a proxy with written authority to attend the meeting and vote on his or her behalf. Voting rights are discussed under "Major shareholders and voting rights".

Change of address

Shareholders registered in the Norwegian Central Securities Depository should send information on changes of address to their registrar and not directly to Hydro.

Financial calendar 2019

April 30	First quarter results
May 7	Annual General Meeting
May 8	Shares traded ex-dividend
May 9	Record date for dividend
May 16	Dividend payment date
July 23	Second quarter results
October 23	Third quarter results

Hydro reserves the right to revise these dates.

Corporate governance

135 About Hydro
135 Global directives and Code of Conduct
136 Business planning and risk management
136 Controls and procedures
137 Transparency and communication
137 Management compensation
137 Board of directors
139 Corporate management board
141 Governance bodies

Quick overview

Hydro is a public limited company organized under Norwegian law with a governance structure based on Norwegian corporate law. Our corporate governance has been designed to provide a foundation for value creation and to ensure good control mechanisms. We maintain common requirements in the form of corporate directives that are mandatory for all parts of our organization.

Our corporate directives help ensure that all our employees carry out their activities in an ethical manner and in accordance with current legislation and Hydro standards. The board of directors has approved our Code of Conduct, which applies to all employees throughout the world, as well as to board members of Hydro and its subsidiaries. The code addresses compliance with laws and other matters such as handling of conflicts of interest and a commitment to equal opportunities for all employees. Our integrity program contributes to compliance with anti-corruption legislation and basic human rights.

Hydro follows the Norwegian code of practice for corporate governance of October 2018.

About Hydro

Hydro is a public limited company organized under Norwegian law with a governance structure based on Norwegian corporate law. Our share listing is on Oslo Børs, which subjects us to Norwegian securities legislation and stock exchange regulations. In the United States the shares are traded on OTCQX International, the premium over-the-counter market tier, in the form of American Depositary Receipts evidencing American Depositary Shares, which carry the same shareholder rights as ordinary shares.

We have developed our governance structure through cooperation between our corporate management board and our superior governance bodies to secure compliance with relevant laws and regulations, Hydro’s corporate directives and to reflect business needs. Development of the governance structure is a continuous process.

We follow the Norwegian Code of Practice for Corporate Governance of October 2018. A detailed description of how we comply - including deviations - is presented in the Board of Directors' report. Information regarding our shareholder policy can be found in the section Shareholder information in this report. Hydro's strategic direction is described in the Board of Directors' report.

More comprehensive information about our governance practices, policies and requirements can be found at www.hydro.com/governance.

Global directives and Code of Conduct

The Hydro Way represents our framework for leadership, organization and culture and is the foundation of our governance system. See page 78 for further information.

Our system is based on the delegation of responsibility to our business areas and to corporate functions whose duties include finance, tax and accounting, HSE, CSR, legal and compliance. In order to maintain uniformly high standards, we set common requirements in the form of constituting documents and global directives. Constituting documents are approved by Hydro's board of directors, the corporate assembly or the general meeting of shareholders, while global directives are approved by the President and CEO. These documents address a number of areas, including health, security, safety and environment (HSE), ethics and social responsibility, strategy and business planning, finance, risk management, and organizational and employee development. This information is made available to all employees. For legal entities where Hydro holds less than 100 percent of the voting rights, Hydro's representatives in the boards of directors shall act in compliance with Hydro's Code of Conduct and endeavor to implement the principles as laid down therein.

Hydro's Code of Conduct is a constituting document and applies to all Hydro employees throughout the world, as well as to board members of Hydro and its subsidiaries. See page 87 for more information about Hydro's Code of Conduct, whistleblowing procedure and integrity program, and www.hydro.com/principles for more information regarding our corporate directives. In Hydro, compliance is defined as adherence to applicable laws and regulations as well as Hydro's corporate directives. Guidelines have been established to assist line management to adhere to Hydro's compliance requirements. Special emphasis is made on reducing the risk of non-compliance within finance, anti-corruption, competition, health, security, safety and environment.

For legal entities where Hydro holds less than 100 percent of the voting rights, we are working through their boards of directors to promote the principles in Hydro’s corporate directives. This includes, but is not limited to, HSE, anti-corruption and human rights.

Governance bodies in Hydro

Business planning and risk management

Hydro's overall goal is to create shareholder value through satisfied customers and motivated and competent employees. We have defined two main processes to ensure that short and long-term targets are achieved.

The portfolio, strategy and business planning process involves strategic and operative planning and results monitoring. The planning, which reflects our ambitions and values, is the basis for the strategies and measures that form the business plans at all levels of our organization. We have defined key performance indicators relevant for each unit, including within finance, human resources, ethics, HSE and climate change, in addition to unit-specific operating targets.

Hydro's people performance and development process, My Way, is designed to assess and develop our human resources, and includes appraisal dialogue, individual development and follow-up, as well as talent planning and succession management. It aims to promote the potential of individual employees and of our organization as a whole and is integrated with our annual business planning process. Risk management is also an integrated part of our planning and reporting process.

Risk management deals with all aspects of value creation, including strategy, finance, commercial matters, organization, climate change, HSE, reputation, corporate responsibility, regulatory and legal matters. Hydro's board of directors regularly reviews and evaluates the overall risk management systems and environment within Hydro. We carry out risk assessments for defined exposure areas. Exposure to certain risks, particularly those threatening life and health, has been consistently reduced to very low levels. See also the section Main risks in this report for a more detailed discussion of Hydro's risk management.

Controls and procedures

Hydro's Internal Control over Financial Reporting (ICFR) framework is primarily designed to provide reasonable assurance to our management and the board of directors regarding the preparation and fair presentation of our Financial Statements.

Hydro’s ICFR framework is based on the COSO 2013 Internal Controls Integrated Framework which consists of five interrelated components and 17 relevant principles that must be present and functioning. The five COSO elements are: Control Environment, Risk Assessment, Control activities, Information and Communication, and Monitoring activities.

Our overall control environment for financial reporting is governed by our ICFR Global Directives, and reflects the tone set by the common attitudes, ethics, and values, and competence of top management and management, and all the rest of our employees.

The ICFR framework is implemented through a risk-based and top-down approach, to provide appropriate organization of the financial reporting, ensuring that Hydro’s activities, accounts, and management are subject to adequate control.

Hydro's disclosure committee assists the CEO and the CFO in ensuring fairness, accuracy, completeness, and timeliness of Hydro's public reports and disclosures, both financial and extra-financial. The disclosure committee is also an integral component of Hydro's disclosure controls and procedures and assesses Hydro's compliance initiatives pertaining to ICFR. The disclosure committee reports quarterly a summary of its activities to the board audit committee. Through reporting from the disclosure committee and internal audit, the audit committee takes an active role in ensuring the functioning of the ICFR framework. The board of directors and the audit committee meet at least annually with the external auditor without members of the corporate management present. See page 141 and www.hydro.com/governance for additional details.

Pre-approval of audit services
The audit committee has established a pre-approval policy governing the engagement of Hydro's primary external auditors for audit and non-audit services to Hydro or any entity within the group. Under this pre-approval policy, the audit committee has defined and pre-approved subcategories of audit and non-audit services. The audit committee's preapproval policy includes annual monetary frames for each of the following categories of services:

- Audit
- Audit-related
- Tax
- Other - not related to financial audit and tax

Within the scope of the pre-approval policy, all services shall be pre-approved. The reported amounts for audit, auditrelated, tax and other non-audit related services are within the monetary frames established by the audit committee.

Hydro's portfolio, strategy and business planning process

Transparency and communication

Hydro's corporate culture embodies the principles of transparency and respect for others. Our ability to operate efficiently in the Norwegian market and internationally requires consistent and professional communication. We adhere, therefore, to the principles of transparency, honesty and accountability when interacting with our stakeholders.

Management compensation

Information concerning remuneration and remuneration policies, share ownership, loans outstanding and loan policy relating to Hydro's board of directors and corporate management board is disclosed in note 8-10 of the consolidated financial statements.

Board of Directors

Name	Place of residence	Year of birth	Position	Board committee	Meetings attended	No. of Hydro shares[1)]	Director since	Term expires
Dag Mejdell	Oslo, Norway	1957	Chairperson	Chairperson Compensation committee	18	35,000	2012	2020
Irene Rummelhoff	Hafrsfjord, Norway	1967	Deputy Chairperson	Compensation committee	17	5,000	2014	2020
Arve Baade[2)]	Sunndalsøra, Norway	1967	Director		4	4,347	2018	2019
Billy Fredagsvik[3)]	Høyanger, Norway	1956	Director	Audit committee	13	5,030	2007	2018
Finn Jebsen	Oslo, Norway	1950	Director	Chairperson Audit committee	17	53,406[7)]	2007	2020
Liselott Kilaas[4)]	Oslo, Norway	1959	Director	Audit committee	8	-	2018	2020
Sten Roar Martinsen	Kopervik, Norway	1962	Director	Compensation committee	18	6,086	2005	2019
Tor Egil Skulstad[5)]	Matrand, Norway	1967	Informal observer[5)]		18	443	2017	2019
Liv Monica Stubholt[6)]	Oslo, Norway	1961	Director	Audit committee	8	-	2010	2018
Svein Kåre Sund	Sunndalsøra, Norway	1962	Director		18	5,651	2017	2019
Thomas Schulz	Rungsted Kyst, Denmark	1965	Director		13	-	2016	2020
Marianne Wiinholt	Klampenborg, Denmark	1965	Director	Audit committee	17	-	2016	2020

Total number of board meetings were 18.

1) As per 2018-12-31.
2) Baade became member of the board as of 2018-10-01.
3) Fredagsvik stepped down form the board as of 2018-10-01.
4) Kilaas became member of the board as of 2018-05-23.
5) Skulstad is an informal observer in the board of directors on behalf of employees in Extruded Solutions. The role is temporary and was created effective 2 October 2017 until the election of board members in 2020. He is appointed by the Norwegian Trade Union Confederation.
6) Stubholt stepped down from the board as of 2018-05-23.
7) Including shares owned by Fateburet AS.

Dag Mejdell, chairperson
- Position: Non-executive Director
- Education: Degree in Economics and Business Administration (siviløkonom) from the Norwegian School of Economics (NHH)
- Current directorships: Chair of International Post Corporation CV, Sparebank 1 SR Bank ASA, NSB AS, Visolit Topco AS, Visolit Finco AS and deputy chairperson of SAS AB

Irene Rummelhoff, deputy chairperson
- Position: Executive vice president, Marketing, Midstream and Processing, Equinor ASA.
- Education: Master of Science in Geology/Geophysics (sivilingeniør) from the Norwegian Institute of Technology (NTH)
- Current directorships: None

Arve Baade, employee representative
- Position: Full-time employee representative representing Industri Energi
- Education: Certificate of apprenticeship in process studies
- Current directorships: None

Finn Jebsen
- Position: Independent businessman
- Education: Degree in Economics and Business Administration (siviløkonom) from the Norwegian School of Economics (NHH). Master’s degree in Business Administration from the University of California, Los Angeles
- Current directorships: Chairperson of Kavli Holding AS. Board member of A. Wilhelmsen AS, Nel ASA, Norfund, Future Technology AS and his wholly-owned company Fateburet AS

Liselott Kilaas
- Position: Independent advisor
- Education: M.Sc Mathamatical Statistics, University of Oslo, master of Business Administation, IMD Lausanne, Switzerland.
- Current directorships: Chairperson of the board of her wholly-owned company Procia Invest AS. Board member of Orkla ASA and Stiftelsen Det Norske Veritas.

Sten Roar Martinsen, employee representative
- Position: Process operator / full-time union official representing the Norwegian Confederation of Trade Unions (LO)
- Education: Certificate of apprenticeship in electrochemistry. Work supervisor training
- Current directorships: None

Tor Egil Skulstad, informal observer/employee representative
- Position: Chief employee representative/full-time union official representing the Norwegian Confederation of Trade Unions (LO)
- Education: Air Force Candidate School, Machinery Focus School
- Current directorships: Board Member of Hydro Extruded Solutions AS, Hydro Extrusion Norway AS and Union Leader Fellesforbundet, Hydro Extruded Solutions AS

Svein Kåre Sund, employee representative
- Position: Technical supervisor, Relining/part-time union official representative in The Norwegian Society of Engineers and Technologists (NITO). Representing the employees through the Central Cooperative Council (Sentralt samarbeidsråd)
- Education: Bachelor of Science, HIST Trondheim
- Current directorships: None

Thomas Schulz
- Position: Group Chief Executive Officer, FL Smidth
- Education: PhD Mining & Mineral Processing, Rheinisch-Westfälische Universität Aachen RWTH, Germany
- Current directorships: None

Marianne Wiinholt
- Position: Executive vice president and Chief Financial Officer, Ørsted (former Dong Energy A/S)
- Education: State Authorised public Accountant
- Current directorships: Board Member and Chair of the Audit Committee of Hempel A/S

Corporate Management Board

Name	Place of Residence	Year of birth	Employed in Hydro since	Current position since	Position	Number of Hydro shares[1)]
Svein Richard Brandtzæg	Oslo, Norway	1957	1985	2009	President and Chief Executive Officer	244,125
Kjetil Ebbesberg[2)]	Düsseldorf, Germany	1971	2009	2015	EVP Rolled Products	54,126
Egil Hogna[3)]	Oslo, Norway	1971	2017	2017	EVP Extruded Solutions	42,951
Eivind Kallevik	Oslo, Norway	1967	1998	2013	EVP and Chief Financial Officer	57,472
Anne-Lene Midseim	Oslo, Norway	1968	1998	2015	EVP CSR, Compliance and General Counsel	26,395
Arvid Moss	Oslo, Norway	1958	1991	2010	EVP Energy and Corporate Business Development	153,563
Katarina Nilsson[4)]	Oslo, Norway	1971	2017	2017	EVP People & HSE	1,685
Hilde Vestheim Nordh[5)]	Oslo, Norway	1969	1995	2019	EVP People & HSE	16,031
Inger Sethov	Høvik, Norway	1970	2005	2015	EVP Communication & Public Affairs	23,963
John Thuestad[6)]	Oslo, Norway	1960	2017	2018	EVP Bauxite and Alumina	20,443
Hilde Merete Aasheim[7)]	Oslo, Norway	1958	2008	2008	EVP Primary Metal	82,287

EVP: Executive vice president

1) As per 2018-12-31
2) Ebbesberg also was employed in Hydro 1996-2007
3) Hogna also was employed in Hydro 1999-2003
4) Nilsson stepped down from the Corporate Management Board as of 2019-01-08
5) Vestheim Nordh became acting member of the Corporate Management Board as of 2019-01-08.
6) Thuestad became member of the Corporate Management Board as of 2018-06-01. Thuestad also was employed in Hydro 1997-1998.
7) Aasheim also was employed in Hydro 2005-2007

Svein Richard Brandtzæg, President and CEO

- Key experience: Executive vice president and head of Aluminium Products. Head of Rolled Products. Head of Metal Products. Head of Magnesium
- Education: PhD, Norwegian Institute of Technology. Degree from the Norwegian School of Management (Bedriftsøkonom BI)
- External directorships: Chairperson of the Norwegian University of Science and Technology (NTNU). Member of Steering Committee of Bilderberg Meetings. Head of European Climate Committee, in the European Round Table for Industrialists

Kjetil Ebbesberg

- Key experience: Executive vice president Metal Markets, Head of BU Foundry alloys, CFO for Metal Products, Managing director and Plant manager at Holmestrand rolling mill and CFO for the Norwegian retail group Coop
- Education: Master of Science in Business from Norwegian School of Economics and Business Administration (NHH)
- External directorships: Chair of the board of European Aluminium (EA), member of the board of Multiconsult ASA, Supervisory Board Aluminium Norf GmbH and German-Norwegian Chamber of Commerce

Egil Hogna

- Key experience: President & Chief Executive Officer in Sapa. Head of Downstream in Yara International, CFO in Yara, Head of Mediterranean in Yara. VP Supply Chain Metal Products in Hydro. Consultant at McKinsey & Company
- Education: Master of Science degree from the Norwegian university of science and technology (NTNU), and an MBA from INSEAD, France
- External directorships: None

Eivind Kallevik, CFO

- Key experience: Head of Finance Bauxite and Alumina. Responsible for integration planning of all functional areas in the Vale deal. Head of Corporate Financial Reporting, Performance and Tax. Head of Finance Aluminium Products. Head of Business Controlling Hydro Aluminium. Responsible for Trade Finance & Cash Management in Norsk Hydro ASA. Prior to Hydro, 6 years of Oil and Gas Financing in Christiania Bank og Kreditkasse
- Education: Master of Business Administration from University of San Francisco
- External directorships: None

Anne-Lene Midseim
- Key experience: Company Secretary; Head of Staffs in Bauxite & Alumina; Head of Corporate Social Responsibility; and Legal Counsel in Hydro. Resident Legal Advisor in East-Timor, Oil for development program, Lawyer for Norwegian law firm Vogt & co, Executive Officer in the Ministry of Oil and Energy
- Education: Candidate in Jurisprudence (cand. jur.) from University of Oslo
- External directorships: Member of the Nomination Committee of Transparency International Norge. Chairperson of the Board Industriforsikring AS

Arvid Moss
- Key experience: Executive vice president and head of Corporate Strategy and Business Development. Project leader for the oil and gas merger agreement with Statoil. Head of Metal Products. Head of Automotive Structures
- Education: Degree in Economics and Business Administration (siviløkonom) from the Norwegian School of Economics (NHH)
- External directorships: President of the Confederation of Norwegian Enterprise (NHO)

Hilde Vestheim Nordh (acting)
- Key experience: Head of HSE & HR in Energy, HSE manager Karmøy, Cast house manager Karmøy
- Education: Diplomingenieurin (TH) in Materials Technology, Rheinisch Westfälische Technische Hochschule (RWTH) Aachen
- External directorships: None

Inger Sethov
- Key experience: Head of Communication & Public Affairs in Hydro. Head of Media Relations in Hydro. 10 years of experience as journalist and correspondent for Reuters and Dow Jones news agencies
- Education: BA Mass Communication & Journalism, California State University Fresno
- External directorships: None

John Thuestad
- Key experience: Head of Extrusion Europe in Hydro. 30 years operational and leadership experience from the aluminium industry.
- Education: Master’s degree Metallurgy, NTNU, MBA Carnegie Mellon University Pittsburgh
- External directorships: Board member Yara International ASA

Hilde Merete Aasheim
- Key experience: Head of Staff Functions and Corporate Services in StatoilHydro. Head of the integration between Statoil and Hydro's oil and gas activities. Head of Leadership and Culture in Hydro. 20 years of service in Elkem, three last years as head of the Silicon Division
- Education: Degree in Economics and Business Administration (siviløkonom) from the Norwegian School of Economics (NHH). Certified public accountant from NHH
- External directorships: Board member of IAI (International Aluminium Institute), member of the Nomination Committee Norsk Industri

Governance bodies

Description	Developments and events during the reporting year	References
General meeting of shareholders		
Company shareholders exercise ultimate authority through the general meeting. Shareholders registered in VPS, the Norwegian Central Securities Depository, five working days in advance of the general meeting of shareholders can vote in person or by proxy. Invitations are sent to shareholders or to the shareholder's security deposit bank. The general meeting of shareholders: • Elects the shareholders' representatives to the corporate assembly • Determines the remuneration of the corporate assembly • Elects the external auditor and approves the auditor's remuneration • Approves the statutory report according to Norwegian requirements and financial statements, including the dividend proposed by the board of directors and recommended by the corporate assembly • Elects the nomination committee and determines their remuneration • Deals with any other matters listed in the notice convening the meeting Shareholders may, at least four weeks before an ordinary general meeting, request in writing that proposals for resolutions are submitted to the general meeting, or that items are added to the agenda.	General meeting in May	The protocols can be found at www.hydro.com/governance
Corporate assembly		
Normally eighteen members. Twelve are elected by the general meeting of shareholders, six are elected by and among the group's employees in Norway. The members are elected for a period of up to two years. In accordance with Norwegian law, the corporate assembly: • Elects the board of directors and determines their remuneration • Nominates the external auditor to be elected by the general meeting of shareholders • Based on recommendations from the board of directors, makes decisions in matters relating to investments that are substantial in relation to Hydro's resources, and when closures and reorganizations will lead to significant changes for the workforce • Provides recommendations to the general meeting of shareholders with respect to approval of the board of directors' proposal regarding the financial statements and dividend	Four meetings. 89 percent meeting attendance. *Members:* Terje Venold (chairperson), Susanne Munch Thore (deputy chairperson), Shahzad Abid, Rolf Arnesen, Andreas Bakken, Nils Bastiansen, Anne Kverneland Bogsnes, Odd Arild Grefstad, Kolbjørn Havnes, Berit Ledel Henriksen, Nils M. Huseby, Ylva Lindberg, Bjørn Petter Moxnes, Ørjan Normann, Birger Solberg, Unni Steinsmo, Jorunn Johanne Sætre, Einar Øren. *Deputy members:* Hilde C. Bjørnland, Gisle L. Johansen, Elisabeth Tørstad, Hans Henrik Kloumann, Jon Martin Bratthammer, Tone Hjelmtvedt, Jan Einan, Morten Sundheim Jensen, Ann Kristin Prytz, Ellen Olstad, Gorm Gustavsen, Roar Jakobsen, Kari Sommerfeldt.	Note 10 to the consolidated financial statements for remuneration and share ownership Articles of association §§ 7-8 at www.hydro.com/governance
Nomination committee		
Minimum three and maximum four members appointed by the general meeting of shareholders. The chairperson of the committee and at least one of the other members shall be elected among the shareholder-elected corporate assembly members. Nominates candidates to the board of directors, the corporate assembly and the nomination committee, and proposes remuneration to the board, its sub-committees, the corporate assembly and the nomination committee.	15 meetings. 100 percent meeting attendance. Members: Terje Venold (chairperson) Susanne Munch Thore Mette Wikborg Berit Ledel Henriksen	Articles of association § 5A and biographical information can befound at www.hydro.com/governance
Board of directors		
The board of directors currently holds 9 members. Six are elected by the corporate assembly, three elected by and among the company's employees in Norway, for a period of up to two years. In addition, the board has invited an informal observer, representing the former Sapa employees, to attend the board meetings, until the next ordinary election of employee representatives. In accordance with Norwegian law, the board of directors assumes the overall governance of the company, ensures that appropriate management and control systems are in place and supervises the day-to-day management as carried out by the President and CEO.	18 meetings. 93 percent meeting attendance. The board of directors is closely following the market and macro-economic developments relevant for the aluminium industry. Highest on the board's agenda in 2018 was the situation for Hydro's operations in Brazil related to the 50% production embargo on Alunorte. The situation has been addressed in all board meetings since the rainfall event in February 2018, and several extraordinary meetings have been held to address critical matters. The board had an HSE deep-dive with focus on fatality prevention, as well as an operational deep-dive into Extruded Solutions. The board conducted site visits at the Holmestrand and Magnor plants.	The board's mandate can be found at www.hydro.com/governance Biographical information on the board members on page 137.

Description	Developments and events during the reporting year	References
	The board of directors conducts an annual self-assessment of its work, competence and cooperation with management and a separate assessment of the chairperson. The board audit committee also performs a self-assessment. The reviews are facilitated by the corporate advisory firm Lintstock. The main conclusions of all assessments were submitted to the nomination committee, which in turn assessed the board's composition and competence.	
All shareholder-elected members are external. No members elected by employees are part of the company's executive management. Employee directors have no other service contractual agreements with the company outside of their employee contracts, though they are subject to their duties as board members. The board of directors has an annual plan for its work. It includes recurring topics such as strategy review, business planning, risk and compliance oversight, financial reporting, people strategy, succession planning as well as HSE and CSR.	All shareholder-elected members were in 2018 deemed to be independent according to the Norwegian standards. None of the company's non-employee board members had any other service contractual agreements with the company. Liv Monica Stubholt, a board member until May 2018, is partner in the Norwegian law firm Advokatfirmaet Selmer DA. Selmer has had assignments for Hydro resulting in fees of NOK 0.5 million in the period January to May. Stubholt has not been involved in these services to Hydro. Thomas Schulz is the CEO of the listed company FLSchmidt. Sales and purchases between FLSchmidt and fully owned Hydro subsidiaries totaled DKK 21.8 million in 2018. Schulz was not directly involved in these transactions.	Note 10 to the consolidated financial statements for remuneration, share ownership and loans.
Compensation committee		
Consists of three of the board of directors´ members. The committee reviews the performance of and puts forward proposals regarding the compensation of the President & CEO to the board of directors. The committee assists in evaluating the compensation of the corporate management board and in determining performance-promoting schemes for management.	6 meetings. 100 percent meeting attendance. *Members:* • Dag Mejdell (chairperson) • Irene Rummelhoff • Sten Roar Martinsen [1)] 1) Martinsen is employed in Hydro and represents the employees through the Norwegian Confederation of Trade Unions (LO). We believe that such reliance does not adversely affect, in any material way, the ability of the compensation committee to act independently or to satisfy the other requirements.	The mandate can be found at www.hydro.com/governance
Audit committee		
Consists of four of the board of directors' members. The audit committee meets Norwegian requirements regarding independence and competence. The primary function of the Audit committee is to assist the Board in exercising its oversight responsibility, with respect to the integrity of the company's financial statements, the company's financial reporting processes and internal controls, the company's risk assessment and risk management policies, the qualifications, independence of the external auditor, the performance of the company's internal audit function, and the company's compliance system. To ensure the independence of the internal audit function, the head of Internal Audit reports functionally to the board through the audit committee. The head of Corporate Compliance has a dotted reporting line to, and meets regularly, with the audit committee. The audit committee maintains a pre-approval policy governing the engagement of the company's primary and other external auditors to ensure auditor independence.	10 meetings. 98 percent meeting attendance. For self-assessment, see information on the Board of directors above. *Members:* • Finn Jebsen (chairperson) • Liselott Kilaas • Marianne Wiinholt • Svein Kåre Sund [2)] 2) Sund is employed in Hydro and represents the employees through the Central Cooperative Council. We believe that such reliance does not adversely affect, in any material way, the ability of the audit committee to act independently or to satisfy the other requirements.	The mandate can be found at www.hydro.com/governance Pre-approval of audit services on page 137
President & CEO and corporate management board		
According to Norwegian corporate law, the President & CEO constitutes a formal governing body that is responsible for the daily management of the company. The division of functions and responsibilities between the President & CEO and the board of directors is defined in greater detail in the rules of procedures established by the board. The Corporate Management Board (CMB), including the President & CEO, has a shared responsibility for promoting Hydro's objectives and securing the company's property, organization and reputation. Members of the CMB are also Executive vice presidents (EVPs) with responsibility for the respective business areas and corporate staffs.	42 meetings in 2018. Effective 01 June 2018, John Thuestad was appointed EVP with a special responsibility for Bauxite & Alumina.	Biographical information on page 139 Note 8 and 9 to the consolidated financial statements for remuneration, share ownership and loans.

Financial statements

144 Consolidated financial statements

149 Notes to the consolidated financial statements

149 Note 1 Reporting entity and basis of presentation
149 Note 2 Significant accounting policies
156 Note 3 Changes in accounting principles and new pronouncements
157 Note 4 Measurement of fair value
158 Note 5 Critical accounting judgment and key sources of estimation uncertainty
160 Note 6 Significant subsidiaries and changes to the consolidated group
162 Note 7 Operating and geographic segment information
166 Note 8 Board of Directors' statement on executive management remuneration
169 Note 9 Management remuneration
171 Note 10 Board of Directors and Corporate Assembly
172 Note 11 Related party information
173 Note 12 Financial and commercial risk management
175 Note 13 Financial instruments
180 Note 14 Derivative instruments and hedge accounting
181 Note 15 Revenue from contracts with customers
183 Note 16 Other income
183 Note 17 Raw material and energy expense
183 Note 18 Employee remuneration
184 Note 19 Depreciation and amortization expense
184 Note 20 Impairment of non-current assets
188 Note 21 Research and development
188 Note 22 Operating leases
188 Note 23 Finance income and expense
189 Note 24 Income taxes
190 Note 25 Short-term investments
190 Note 26 Trade and other receivables
191 Note 27 Inventories
191 Note 28 Other non-current assets
192 Note 29 Property, plant and equipment
193 Note 30 Intangible assets
194 Note 31 Goodwill
194 Note 32 Investments in joint arrangements and associates
196 Note 33 Trade and other payables
196 Note 34 Short and long-term debt
197 Note 35 Provisions
199 Note 36 Contingent liabilities and contingent assets
200 Note 37 Employee retirement plans
203 Note 38 Shareholders' equity
205 Note 39 Capital management
207 Note 40 Dividends
207 Note 41 Contractual commitments and commitments for future investments
208 Note 42 Cash flow information
208 Note 43 Auditor's remuneration

210 Financial statements Norsk Hydro ASA

213 Notes to the financial statements Norsk Hydro ASA

223 Responsibility Statement

224 Independent auditor's report

228 Statement of the Corporate Assembly

Consolidated financial statements

Consolidated income statements

Amounts in NOK million (except per share amounts). Years ended December 31	Notes	**2018**	2017
Revenue	7, 15	**159,377**	109,220
Share of the profit (loss) in equity accounted investments	7, 32	**765**	1,527
Other income, net	16	**772**	2,947
Total revenue and income		**160,913**	113,693
Raw material and energy expense	17	**102,523**	69,848
Employee benefit expense	18	**23,176**	13,285
Depreciation, amortization and impairment	19, 20	**7,369**	6,162
Other	21, 22	**19,324**	12,209
Total expenses		**152,391**	101,504
Earnings before financial items and tax	7	**8,522**	12,189
Finance income	23	**255**	481
Finance expense	23	**(2,315)**	(1,596)
Finance income (expense), net		**(2,060)**	(1,114)
Income before tax		**6,462**	11,075
Income taxes	24	**(2,139)**	(1,891)
Net income		**4,323**	9,184
Net income attributable to non-controlling interests		**67**	401
Net income attributable to Hydro shareholders		**4,256**	8,783
Basic and diluted earnings per share attributable to Hydro shareholders	38	**2.08**	4.30

The accompanying notes are an integral part of the consolidated financial statements.

Consolidated statements of comprehensive income

Amounts in NOK million. Years ended December 31	Notes	**2018**	2017
Net income		**4,323**	9,184
Other comprehensive income			
Items that will not be reclassified to income statement			
Remeasurement postemployment benefits, net of tax	38	**(718)**	761
Share of remeasurement postemployment benefits of equity accounted investments, net of tax	38	**-**	(2)
Unrealized gain (loss) on securities, net of tax	38	**394**	(255)
Total		**(324)**	504
Items that will be reclassified to income statement			
Currency translation differences, net of tax	38	**(2,031)**	(1,387)
Cash flow hedges, net of tax	38	**(14)**	174
Share of other comprehensive income that will be reclassified to income statement of equity accounted investments, net of tax	38	**72**	(736)
Total		**(1,973)**	(1,949)
Other comprehensive income		**(2,296)**	(1,444)
Total comprehensive income		**2,027**	7,740
Total comprehensive income attributable to non-controlling interests		**(273)**	103
Total comprehensive income attributable to Hydro shareholders		**2,300**	7,637

The accompanying notes are an integral part of the consolidated financial statements.

Consolidated balance sheets

Amounts in NOK million, December 31	Notes	2018	2017 Restated
Assets			
Cash and cash equivalents		**5,995**	11,828
Short-term investments	25	**975**	1,311
Trade and other receivables	26	**20,743**	19,983
Inventories	27	**26,483**	20,711
Other current financial assets	13	**801**	798
Total current assets		**54,997**	54,631
Property, plant and equipment	29	**71,299**	72,933
Intangible assets	30, 31	**11,443**	12,712
Investments accounted for using the equity method	32	**11,570**	11,221
Other non-current assets	13, 28	**5,720**	4,410
Prepaid pension	37	**5,162**	5,750
Deferred tax assets	24	**1,664**	1,617
Total non-current assets		**106,858**	108,643
Total assets	7	**161,855**	163,273
Liabilities and equity			
Bank loans and other interest-bearing short-term debt	34	**8,543**	8,245
Trade and other payables	33	**20,381**	19,571
Provisions	35	**3,281**	2,296
Taxes payable		**2,266**	2,570
Other current financial liabilities	13	**515**	655
Total current liabilities		**34,987**	33,337
Long-term debt	34	**7,080**	9,012
Provisions	35	**5,588**	5,828
Pension liabilities	37	**15,648**	15,118
Other non-current financial liabilities	13	**2,429**	2,041
Other liabilities		**2,318**	2,228
Deferred tax liabilities	24	**3,037**	3,501
Total non-current liabilities		**36,098**	37,728
Total liabilities		**71,086**	71,064
Share capital	38	**2,272**	2,272
Additional paid-in capital	38	**29,126**	29,097
Treasury shares	38	**(756)**	(810)
Retained earnings		**57,127**	56,452
Other components of equity	38	**(1,936)**	20
Equity attributable to Hydro shareholders		**85,833**	87,032
Non-controlling interests		**4,936**	5,178
Total equity		**90,769**	92,209
Total liabilities and equity		**161,855**	163,273

The accompanying notes are an integral part of the consolidated financial statements.

Consolidated statements of cash flows

Amounts in NOK million. Years ended December 31	Notes	2018	2017
Operating activities			
Net income		**4,323**	9,184
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation, amortization and impairment	19, 20	**7,369**	6,162
Share of profit in equity accounted investments		**(765)**	(1,527)
Dividends received from equity accounted investments	32	**1,219**	2,247
Deferred taxes		**(585)**	(685)
Loss (gain) on sale of non-current assets		**188**	(2,046)
Net foreign exchange loss	23	**1,303**	875
Net sales of trading securities		**187**	57
Capitalized interest	23	**(1)**	(76)
Changes in assets and liabilities that provided (used) cash:			
Trade and other receivables		**(1,412)**	(554)
Inventories		**(5,599)**	(1,518)
Trade and other payables		**675**	1,013
Commodity derivatives		**(415)**	322
Other items		**538**	893
Net cash provided by operating activities	42	**7,025**	14,347
Investing activities			
Purchases of property, plant and equipment		**(7,219)**	(7,296)
Purchases of other long-term investments		**(389)**	(11,190)
Purchases of short-term investments		**-**	(5,094)
Proceeds from sales of property, plant and equipment		**80**	57
Investment grants received		**333**	636
Proceeds from sales of other long-term investments		**(1)**	49
Proceeds from sales of short-term investments		**-**	8,402
Net cash used in investing activities		**(7,196)**	(14,436)
Financing activities			
Loan proceeds		**7,057**	15,271
Principal repayments		**(5,984)**	(10,917)
Net increase (decrease) in other short-term debt		**(2,934)**	2,515
Proceeds from shares issued		**47**	40
Dividends paid		**(3,622)**	(3,069)
Net cash provided by (used in) financing activities		**(5,436)**	3,840
Foreign currency effects on cash		**(226)**	40
Net increase (decrease) in cash and cash equivalents		**(5,833)**	3,791
Cash and cash equivalents at beginning of year		**11,828**	8,037
Cash and cash equivalents at end of year		**5,995**	11,828

The accompanying notes are an integral part of the consolidated statements.

Consolidated statements of changes in equity

Amounts in NOK million	Notes	Share capital	Additional paid-in capital	Treasury shares	Retained earnings	Other components of equity	Equity attributable to Hydro share-holders	Non-control-ling interests	Total equity
December 31, 2016		2,272	29,070	(870)	50,210	1,224	81,906	5,733	87,640
Treasury shares issued to employees	38		27	60			87		87
Dividends	40				(2,556)		(2,556)	(702)	(3,258)
Capital contribution in subsidiaries								3	3
Items not reclassified to income statement in subsidiaries divested	38				(3)	3	-	40	40
Total comprehensive income for the year					8,783	(1,147)	7,637	103	7,740
December 31, 2017		2,272	29,097	(810)	56,435	80	87,074	5,178	92,252
Effect of change in accounting principle					17	(60)	(43)	-	(43)
January 1, 2018		2,272	29,097	(810)	56,452	20	87,032	5,178	92,209
Treasury shares issued to employees	38		29	53			83		83
Dividends	40				(3,581)		(3,581)	(106)	(3,687)
Capital contribution in subsidiaries								138	138
Total comprehensive income for the year					4,256	(1,956)	2,300	(273)	2,027
December 31, 2018		2,272	29,126	(756)	57,127	(1,936)	85,833	4,936	90,769

The accompanying notes are an integral part of the consolidated statements.

Oslo, March 12, 2019

Dag Mejdell
Chair

Irene Rummelhoff
Deputy chair

Arve Baade
Board member

Finn Jebsen
Board member

Liselott Kilaas
Board member

Sten Roar Martinsen
Board member

Thomas Schulz
Board member

Svein Kåre Sund
Board member

Marianne Wiinholt
Board member

Svein Richard Brandtzæg
President and CEO

Notes to the consolidated financial statements

Note 1 - Reporting entity and basis of presentation

The reporting entity reflected in these financial statements comprises Norsk Hydro ASA and consolidated subsidiaries (Hydro). Hydro is headquartered in Oslo, Norway, and the group employs around 36,000 people in more than 40 countries. Hydro is a global supplier of aluminium with operations throughout the industry value chain. Operations include power production, bauxite extraction, alumina refining, aluminium smelting, remelting and recycling, rolling activities, and extruded solutions. The Board of Directors and the President and CEO authorized these financial statements for issue on March 12, 2019. Hydro is listed on the Oslo stock exchange, Oslo Børs.

Basis of presentation
The financial statements have been prepared on a historical cost basis except for certain assets, liabilities and financial instruments, which are measured at fair value. Preparation of financial statements including note disclosures requires management to make estimates and assumptions that affect amounts reported. Actual results may differ. See note 5 Critical accounting judgment and key sources of estimation uncertainty.

Presentation and classification of items in the financial statements is consistent for the periods presented except certain effects of implementation of new accounting standards where implementation regulation allows or requires implementation as of the beginning of the year of transition. Such effects are described in note 3 Changes of accounting principles and new pronouncements.

Gains and losses on disposal of non-current assets are presented net, as well as expenditures related to provisions that are reimbursed by a third party. However, insurance compensation and government grants are reported on a gross basis.

The functional currency of Norsk Hydro ASA is the Norwegian krone (NOK). The Hydro group financial statements are presented in NOK.

As a result of rounding adjustments, the figures in one or more columns included in the financial statements may not add up to the total of that column.

Interest rates used for calculating net present values are rounded to the nearest 10 basis points for post employment benefits, to the nearest 25 basis points for other non financial assets and liabilities.

Note 2 - Significant accounting policies

The consolidated financial statements of Norsk Hydro ASA and its subsidiaries are prepared in accordance with International Financial Reporting Standards (IFRS) as endorsed by the European Union (EU) and Norwegian authorities and effective as of December 31, 2018. Hydro also provides the disclosure as specified under the Norwegian Accounting Act (Regnskapsloven).

The following description of accounting principles applies to Hydro's 2018 financial reporting, including all comparative figures, except where the implementation provisions in IFRS 15 Revenue from Contracts with Customers specifies that the new accounting principles are applied from January 1, 2018. See note 1 Reporting entity and basis of presentation, note 3 Changes in accounting principles and new pronouncements, note 4 Measurement of fair value, and note 5 Critical accounting judgment and key sources of estimation uncertainty for additional information related to the presentation, classification and measurement of Hydro's financial reporting.

Basis of consolidation
The consolidated financial statements include Norsk Hydro ASA and subsidiaries, which are entities in which Hydro has the power to govern the financial and operating policies of the entity (control). Control is normally achieved through ownership, directly or indirectly, of more than 50 percent of the voting power. Currently, Hydro has more than 50 percent of the voting power in all subsidiaries. Subsidiaries are included from the date control commences until the date control ceases.

Intercompany transactions and balances have been eliminated. Profits and losses resulting from intercompany transactions have been eliminated.

Non-controlling interests
Non-controlling interests represent equity interests in subsidiaries held by other owners than Hydro. Non-controlling interests are reported as a separate section of the Group's equity in accordance with IFRS 10 Consolidated Financial

Statements. Results attributed to non-controlling interests are based on ownership interest, or other method of allocation if required by contract.

Business combinations
Business combinations are accounted for using the acquisition method in accordance with IFRS 3 Business Combinations. Consideration is the sum of the fair values, as of the date of exchange, of the assets given, liabilities incurred or assumed, and equity instruments issued in exchange for control of the acquiree. The fair value of Hydro's pre-existing ownership interest in an acquiree is included in the consideration, with any gain or loss recognized in Other income, net.

The acquiree's identifiable assets, liabilities and contingent liabilities are recognized separately at the acquisition date at their fair value irrespective of any non-controlling interest. Goodwill is initially measured either as the excess of the consideration over Hydro's interest in the fair value of the acquiree's identifiable net assets (partial goodwill), or as the fair value of 100 percent of the acquiree in excess of the acquiree's identifiable net assets (full goodwill). The method is elected on a transaction-by-transaction basis. Hydro has applied the partial goodwill method for all business combinations completed prior to December 31, 2018. Goodwill is not amortized, but is tested for impairment annually, and more frequently if indicators of possible impairment are observed, in accordance with IAS 36 Impairment of Assets. Goodwill is allocated to the cash generating units or groups of cash generating units expected to benefit from the synergies of the combination and that are monitored for internal management purposes.

The interest of non-controlling shareholders in the acquiree is initially measured as the non-controlling interests' proportion of the fair value of the net assets recognized (partial goodwill method), or as the non-controlling interests' proportion of the fair value of the acquiree (full goodwill method). Non-controlling interests are subsequently adjusted for changes in equity of the subsidiary after the acquisition date.

Transactions between non-controlling shareholders and the group
Sales and purchases of share interests and equity contributions not resulting in Hydro gaining or losing control of a subsidiary are reported as equity transactions in accordance with IFRS 10. No gain, loss or change of recognized assets, liabilities or goodwill is recognized as a result of such transactions.

Investments in associates and joint ventures
An associate is an equity investment in which Hydro has the ability to exercise significant influence, which is the power to participate in the financial and operating policy decisions of the entity. Significant influence is assumed to exist when Hydro owns between 20 and 50 percent of the voting rights unless other terms and conditions affect Hydro's influence.

A joint arrangement is an entity, asset or operation that is subject to contractually established joint control. Special voting rights may extend control beyond what is conveyed through the owners' proportional ownership interest. Such rights may take the form of a specified number of board representatives, the right of refusal for important decisions, or the requirement of a qualified majority for important decisions which effectively results in joint control with the specific ownership situation. Joint ventures are joint arrangement which represents a residual interest in the arrangement rather than an interest in assets and responsibility for liabilities.

Hydro accounts for investments in associates and participation in joint ventures using the equity method. This involves recognizing Hydro's interest based on its proportional share of the entity's equity, including any excess values and goodwill. Hydro recognizes its share of net income, including depreciation and amortization of excess values and any impairment losses, in Share of the profit (loss) in equity accounted investments. Other comprehensive income derived from associates and joint ventures is included in Hydro's Other comprehensive income. Hydro's proportional share of unrealized profits resulting from transactions with associates and joint ventures, including transfer of businesses, is eliminated. Accounting policies used by associates and joint ventures may differ from the accounting policies adopted by Hydro. Differences in recognition or measurement are adjusted for prior to equity accounting.

Investments in associates and joint ventures are tested for impairment when there are indications of a possible loss in value. An impairment loss is recognized if the recoverable amount, estimated as the higher of fair value less cost of disposal or value in use, is below Hydro's carrying value. Impairment losses are reversed if circumstances change and the impairment situation is no longer deemed to exist.

Investments in joint operations and jointly owned assets
Joint operations are arrangements under contractually joint control where the joint operators have an interest in the assets; or benefits from the service potential of the assets; as well as have a direct obligation for the liabilities of the joint arrangement. Joint operations can result from the legal form of the arrangement or other facts and circumstances resulting in an interest in the service potential of the asset and obligation for liabilities. Jointly owned assets are arrangements where Hydro and the other partners have a direct ownership in specifically identified assets, but where joint control is not established. Hydro recognizes its share of assets, liabilities, revenues, if any, and expenses of joint operations and jointly owned assets on a line-by-line basis in the group financial statements.

Assets held for sale and Income from discontinued operations
Assets held for sale are reported separately in accordance with IFRS 5 Non-current Assets Held for Sale and Discontinued Operations, provided that the sale is highly probable, which includes the criteria that management is committed to the sale, and that the sale will be completed within one year. Assets held for sale are not depreciated, but are measured at the lower of carrying value and the fair value less costs to sell for the asset group. Assets are not reclassified in prior period balance sheets. Immaterial disposal groups are not reclassified.

A discontinued operation is a component of Hydro that is held for sale or has been disposed of. A discontinued operation is a separate major line of business or geographical area of operations. Related cash flows, results of operations and gain or loss from disposal are reported separately as Income (loss) from discontinued operations.

Assets held for sale, liabilities in disposal groups and income and expense from discontinued operations are excluded from specifications presented in the notes unless otherwise stated.

Revenue recognition
Hydro implemented IFRS 15 Revenue from Contracts with Customers as of January 1, 2018. The new standard is implemented retrospectively with the cumulative effect of initially applying this standard recognized directly to equity at implementation. As such, IFRS 15 applies to the results reported for 2018 only, while the amounts for 2017 follows the principles in IAS 18 Revenue. The transition is further described in note 3 Changes in accounting principles and new pronouncements.

IFRS 15 requires us to, for each contract with a customer, identify the performance obligations, determine the transaction price, allocate the transaction price to performance obligations to the extent the contract covers more than one performance obligation, determine whether revenue should be recognized over time or at a point in time, and, finally, recognize revenue when or as performance obligations are satisfied. The significant judgment in applying IFRS 15 for Hydro is related to which contracts that qualify for recognition over time, versus recognition at a point in time; at delivery to customer.

For products which are not made to the customer's specification, revenue is recognized at delivery to the customer. For products made to customer specifications and orders, we have assessed whether revenue from those contracts should be recognized over time or at a point in time. We have assessed whether Hydro has an enforceable right to payment for performance completed to date, including a reasonable margin, throughout the production period. Our conclusion is that for close to all contracts we do not have enforceable right to payment as described in IFRS 15, and thus recognition at a point in time is appropriate.

A performance obligation is satisfied when or as the customer obtains control with the goods or services delivered. For some contracts, mainly where products are delivered to the customer's site as consignment stock, control is concluded to pass to the customer at an earlier time than transfer of risk and rewards as assessed under IAS 18.

Sale of electricity continues to be recognized as electricity is delivered to customers through the relevant grid.

Under IAS 18, applied for the 2017 income statement, revenue from sales of products, including products sold in international commodity markets, was recognized upon transfer of ownership, which generally occurs on delivery. For multiple delivery contracts, revenue was allocated to deliveries in line with contract terms, normally either fixed price per unit or a combination of fixed elements and price references to observable market prices. Sales terms providing transportation and related services for sold goods after transfer of ownership to the customer (CIF and similar incoterms) were considered one, combined, delivery to the customer. Revenue, including the service element, was recognized at transfer of ownership of the goods, and remaining costs accrued for. Any rebates or incentive allowances were deferred and recognized in income upon the realization or at the closing of the rebate period. In arrangements where Hydro acted as an agent, such as commission sales, the net commission fee was recognized as revenue.

Margins related to the trading of derivative commodity instruments, including instruments used for risk management purposes, purchase or delivery of physical commodities on a commodity exchange, and physical commodity purchases and sales agreed in combination with a single counterpart, are presented on a net basis in the income statement with trading margins included in revenues.

Government grants
Government grants are recognized in accordance with IAS 20 Accounting for Government Grants and Disclosure of Government Assistance. Grants are recognized when there is a reasonable assurance that Hydro will comply with relevant conditions and that the grants will be received. Government grants are deferred in other non-current liabilities until the associated activity is performed or expenses recognized. Investment grants are recognized over the period the associated asset is depreciated. All government grants are recognized in Other income, net. Investment grants are included in Investing activities in the statement of cash flows.

Other income, net
Transactions resulting in income from activities other than normal production and sales operations are classified as Other income, net. This includes gains and losses resulting from the disposal of PP&E, investments in subsidiaries, associates or joint ventures as well as government grants, insurance compensation, rental revenue and revenue from utilities.

Inventories
Inventories are valued at the lower of cost, using the first-in, first-out method (FIFO), or net realizable value. Net realizable value is the estimated selling price in the ordinary course of business less estimated costs of completion and selling costs. Inventory cost includes direct materials, direct labor and a portion of production overhead (manufactured goods) or the purchase price of the inventory. Abnormal amounts of idle facility expense, freight, handling costs, and wasted materials are recognized as expense in the current period. Inventory write-downs to net realizable value occurs when the cost of the inventory is not recoverable, and is reversed in later periods if there is clear evidence of an increase in the net realizable value.

Property, plant and equipment
Property, plant and equipment (PP&E) is recognized at acquisition cost. The carrying value of PP&E is comprised of the historical cost less accumulated depreciation and any accumulated impairment losses. The carrying value also includes the estimated value of the asset retirement obligation upon initial recognition of the liability. Hydro uses the cost model for PP&E and investment properties.

Capitalized maintenance
Expenditures for maintenance and repairs applicable to production facilities are capitalized in accordance with IAS 16 Property, Plant and Equipment when such costs are incurred on a scheduled basis with a time interval of greater than one year. Expenditures that regularly occur at shorter intervals are expensed as incurred. Major replacements and renewals are capitalized and any assets replaced are retired.

Stripping cost
Stripping costs incurred during the mining production phase are allocated between cost of inventory produced and the existing mine asset. Stripping costs are allocated as a component of the mine asset in the event they represent significantly improved access to ore. Stripping costs include such activities as removal of vegetation as well as digging the actual pit for mining the ore.

Capitalized interest
Hydro capitalizes borrowing costs on qualifying assets in accordance with IAS 23 Borrowing Costs. Currency gains or losses related to Hydro's foreign currency denominated borrowings are not capitalized.

Leased assets
Leases which transfer to Hydro substantially all the risks and benefits incidental to ownership of the leased item are identified using the guidance in IAS 17 Leases and IFRIC 4 Determining whether an Arrangement contains a lease. Such arrangements are capitalized as finance leases and included under Property, plant and equipment at the fair value of the leased asset, or, if lower, the present value of the minimum lease payments as of the later of date of inception of the lease or getting access to the services of the asset. The assets are depreciated over the shorter of the estimated useful life of the asset or the lease term. The liability is included in Long-term debt and amortized by the amount of the lease payment less the effective interest expense. All other leases are classified as operating leases with lease payments recognized as an expense over the term of the lease.

Asset retirement obligations
Hydro recognizes liabilities for the estimated fair value of asset retirement obligations (ARO) relating to assets where such obligations exists, in the period incurred in accordance with IAS 37 Provisions, Contingent Liabilities and Contingent Assets. Fair value is estimated as the present value of costs relating to dismantlement or removal of buildings or other assets, and/or the restoration or rehabilitation of industrial or mining sites. The liability is recognized when an asset is constructed and ready for use or when the obligation is incurred if imposed at a later date. Related asset retirement costs are capitalized and depreciated over the useful life of the asset. Accretion costs are recognized for the change in the present value of the liability and classified as part of Financial expense. Other changes to estimated fair value of ARO is recognized when identified. The increase or reduction to the liability is recognized as an increase or reduction of the value of the asset. Liabilities that are conditional on a future event (e.g. the timing or method of settlement) are recognized when the value of the liability can be reasonably estimated.

Intangible assets
Intangible assets acquired individually or as a group are recognized at fair value when acquired. Intangible assets acquired in a business combination are recognized at fair value separately from goodwill when they arise from contractual or legal rights or can be separated from the acquired entity and sold or transferred.

Emission rights
Government granted and purchased CO_2 emission allowances expected to be used towards Hydro's own emissions are recognized as intangible assets at nominal value (cost). The amounts are not amortized, but are tested for impairment at least annually. Actual CO_2 emissions which exceed the level covered by emission rights are recognized as a liability. Sale of emission rights are recognized at the time of sale at the transaction price. CO_2 emission allowances purchased for trading are measured and classified as inventory.

Research and development
Research expenditures are expensed as incurred. Development costs are capitalized as intangible assets at cost in accordance with IAS 38 Intangible Assets when the recognition criteria are met, including probable future economic benefit and that the cost can be measured reliably.

Exploration cost
Exploration cost for mineral resources are expensed as incurred. Costs related to acquired exploration rights are allocated to the relevant areas and capitalized. An area represents a unit that may be utilized based on shared infrastructure and may include several licenses. Exploration rights are transferred to mine development cost when development starts. Exploration rights related to undeveloped areas remain on the balance sheet as intangible assets (mineral rights) until a development is decided or a decision not to develop the area is made.

Depreciation and amortization
Depreciation and amortization expenses are measured on a straight-line basis over the estimated useful life of the asset, commencing when the asset is ready for its intended use. Mine property and development costs in extractive activities are depreciated using the unit-of-production method, using proved and probable reserves. Tangible and intangible assets with an indefinite useful life are not depreciated. Estimated useful life by category is as follows:

- Machinery and equipment, initial investment 4-30 years, for power plants up to 75 years
- Machinery and equipment, capitalized maintenance 1-15 years
- Buildings 20-50 years
- Intangible assets with finite lives 3-10 years, for rights related to hydroelectric power production up to 50 years

A component of an item of property, plant and equipment with a significantly differing useful life and a cost that is significant in relation to the item is depreciated separately. At each financial year-end Hydro reviews the residual value and useful life of its assets, with any estimate changes accounted for prospectively over the remaining useful life of the asset.

Impairment of property, plant and equipment and intangible assets
Property, plant and equipment and intangible assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable, in accordance with IAS 36 Impairment of Assets. Exploration cost for undeveloped mining areas are assessed for impairment under IFRS 6 Exploration for and Evaluation of Mineral Resources. Intangible assets with indefinite useful life are tested for impairment at least annually.

Provisions
Provisions are recognized when Hydro has a present obligation (legal or constructive) as a result of a past event, it is probable (more likely than not) that Hydro will be required to settle the obligation, and a reliable estimate can be made of the amount, taking into account the risks and uncertainties. The provision is measured as the present value of the cash flows estimated to settle the obligation. Uncertain outcomes are measured as the expected value of reasonably possible outcomes. See also the accounting policy discussion for Asset retirement obligations.

Exit and disposal costs
Hydro recognizes a provision in the amount of the direct costs associated with an exit and/or disposal activity when a formal commitment to a detailed exit plan is made and communicated to those affected. A provision for termination benefits to employees is recognized as of the date of employee notification. Costs related to such activities are classified as restructuring costs if the exit or disposal materially change the scope of Hydro's business.

Contingent liabilities and assets
A contingent liability is a possible obligation that arises from a past event, with the resolution of the contingency dependent on uncertain future events, or a present obligation where no outflow is probable. Major contingent liabilities are disclosed in the financial statements unless the possibility of an outflow of economic resources is remote. Contingent assets are not recognized in the financial statements.

Foreign currency transactions
Transactions in foreign currencies are initially recorded in the functional currency of the transacting entity by applying the rate of exchange as of the date of the transaction. Monetary assets and liabilities denominated in foreign currencies are translated into the functional currency at the rate of exchange at the balance sheet date. Currency gains or losses are included in Finance expense.

Foreign currency translation
For consolidation purposes, the financial statements of subsidiaries with a functional currency other than Norwegian kroner (NOK) are translated into NOK. Assets and liabilities, including investment in associates, joint ventures and goodwill, are translated using the rate of exchange as of the balance sheet date. Income, expenses and cash flows are translated using the average exchange rate for the reported period. Goodwill is recognized in the predominant functional currencies in the acquired businesses. Translation adjustments are recognized in Other comprehensive income and accumulated in Currency translation differences in Other components of equity. On disposal of such subsidiary, joint venture or associate, the

cumulative translation adjustment of the disposed entity is recognized in the income statement as part of the gain or loss on disposal.

Cash and cash equivalents
Cash and cash equivalents in the balance sheet includes cash, bank deposits and all other monetary instruments with a maturity of less than three months from the date of acquisition and are measured at nominal value.

Financial assets
Financial assets represent a contractual right by Hydro to receive cash or another financial asset in the future. Financial assets include financial derivatives and commodity derivative contracts, receivables and equity interests, as well as financial instruments used for cash-flow hedges.

Starting from January 1, 2018, financial assets are recognized in accordance with IFRS 9 Financial Instruments. On initial recognition, a financial asset is classified as measured at amortized cost; at fair value through other comprehensive income (FVOCI) or at fair value through profit or loss (FVTPL). Classification depends on the business model and, for some instruments, the company's choice. Financial assets are derecognized when the rights to receive cash from the asset have expired or when Hydro has transferred the asset.

Trade receivables
Trade receivables are initially recognized at transaction price, subsequently accounted for at amortized cost and are reviewed for impairment on an ongoing basis. Individual accounts are assessed for impairment taking into consideration indicators of financial difficulty and management assessment. Portfolios of trade receivable where expected losses are more than insignificant are reduced for those expected losses. Discounting generally does not have a material effect on accounts receivable, however, in special cases discounting may be applied. Hydro's business model for most trade receivable is to hold the receivables to collect the contractual cash flows. For some portfolios of trade receivables, factoring is applied, however, we have not identified portfolios where there is a mix of receivables that are held to collect contractual cash flows and receivables that are regularly sold requiring us to measure the receivable at FVOCI.

Debt instruments
Debt instruments other than trade receivables include bank deposits and all other monetary instruments with a maturity above three months at the date of purchase, investments in debt securities, and certain other receivables. These instruments are measured at amortized costs, with the exception of instruments where cash flows are not contractually fixed and thus required to be measured at FVTPL.

Short-term debt instruments are included in Short-term investments. Long-term debt instruments are included in Other non-current assets, with the exception for loans to associates and joint ventures, which are included in Investments accounted for using the equity method.

Equity instruments
Hydro's portfolio of trading securities is measured at FVTPL, and included in Sort-term investments. Other equity investments that are not consolidated or accounted for using the equity method are classified as either FVTPL or FVOCI on an individual investment basis. Hydro classifies investments in other entities with strategic or operational purpose, such as getting access to raw materials or in other ways cooperating with those entities, primarily as FVOCI, as Hydro considers this classification to be more relevant. Any dividend received from such investment is recognized in Finance income. On disposal of these investments, no gain or loss will be recognized in the income statement, however, any related accumulated value change will be reclassified from Other components of equity to Retained earnings.

These investments were classified as available-for-sale in 2017.

Financial liabilities
Financial liabilities represent a contractual obligation by Hydro to deliver cash in the future, and are classified as either short- or long-term. Financial liabilities include financial derivatives, commodity derivative contracts and other financial liabilities as well as financial instruments used for cash-flow hedges. Financial liabilities, with the exception of derivatives, are initially recognized at fair value, including transaction costs directly attributable to the transaction, and are subsequently measured at amortized cost. Financial liabilities are derecognized when the obligation is discharged through payment or when Hydro is legally released from the primary responsibility for the liability.

Derivative instruments
Derivative instruments are marked-to-market with the resulting gain or loss reflected in the income statement, except when the instruments meet the criteria for cash flow hedge accounting and are designated as hedge instruments. Derivatives, including hedging instruments and embedded derivatives with expected cash flows within twelve months from the balance sheet date, or held solely for trading, are classified as short-term. Instruments with expected cash flows more than 12 months after the balance sheet date are classified as short and long-term based on the timing of the estimated cash flows.

Derivative contracts are presented gross on the balance sheet unless contract terms include the possibility to settle the contracts on a net basis and Hydro has the intention and ability to do so. The ability to settle net is conditional on simultaneous offsetting cash-flows.

Physical contracts for commodities that are readily convertible to cash are evaluated on a portfolio basis. Portfolios are defined based on business purpose, internal mandates and internal responsibilities. If a portfolio of contracts contains contracts of a similar nature that are settled net in cash, or the underlying products are not intended for own use, the entire portfolio of contracts is recognized at fair value and classified as derivatives. Physical commodity contracts that are entered into and continue to be held for the purpose of the receipt or delivery of the commodity in accordance with Hydro's expected purchase, sale or usage requirements (own use) are not accounted for at fair value. Commodity purchase contracts are generally considered to be the primary source for usage requirements. Hydro's own production of such commodities, for instance electricity, alumina and primary aluminium, is considered to be available for use or sale at Hydro's discretion unless relevant concessions contains restrictions for use.

Derivative commodity instruments are marked-to-market with their fair value recorded in the balance sheet as either assets or liabilities. Adjustments for changes in the fair value of the instruments are reflected in revenue and/or raw material cost. Forward currency contracts and currency options are recognized in the balance sheet and measured at fair value at each balance sheet date with the resulting gain or loss recorded in Finance expense. Interest income and expense relating to swaps are netted and recognized as income or expense over the life of the contract.

Hedge accounting is applied when specific hedge criteria are met, including documentation of the hedge relationship. The changes in fair value of the hedging instruments are offset in part or in full by the corresponding changes in the fair value or cash flows of the underlying hedged exposures. Gains and losses on cash flow hedging instruments are recognized in Other comprehensive income and deferred in the Hedging reserve in Other components of equity until the underlying transaction is recognized in the income statement. Deferred gains and losses relating to forecasted hedged transactions that are no longer expected to occur are immediately recognized in the income statement. Any amounts resulting from hedge ineffectiveness are recognized in the current period's income statement.

An embedded derivative is accounted for as a separate financial instrument, provided that the economic characteristics and risks of the embedded derivative are not closely related to those of the host contract, a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative, and the host contract is not accounted for at fair value. Embedded derivatives are classified both in the income statement and on the balance sheet based on the risks in the derivatives' underlying.

Income taxes, current and deferred

Taxes payable is based on taxable profit for the year, which excludes items of income or expense that are taxable or deductible in other years. Taxable profit also excludes items that are never taxable or deductible. Hydro's liability for current tax is calculated using tax rates that have been enacted or substantively enacted as of the balance sheet date.

Deferred income tax expense is calculated using the liability method in accordance with IAS 12 Income Taxes. Deferred tax assets and liabilities are classified as non-current in the balance sheet and are measured based on the difference between the carrying value of assets and liabilities for financial reporting and their tax basis when such differences are considered temporary in nature. For items recognized as an asset and a liability at inception, such as an asset retirement obligation or a lease, temporary differences related to the asset and liability are considered in combination, and deferred tax assets and liabilities are recognized on changes to the temporary differences through the life of the items. Temporary differences related to intercompany profits are deferred using the buyer's tax rate. Deferred tax assets are reviewed for recoverability every balance sheet date, and the amount probable of recovery is recognized.

Deferred income tax expense represents the change in deferred tax asset and liability balances during the year, except for the deferred tax related to items recognized in Other comprehensive income or resulting from a business combination or disposal. Changes resulting from amendments and revisions in tax laws and tax rates are recognized when the new tax laws or rates become effective or are substantively enacted. Uncertain tax positions are recognized in the financial statements based on management's expectations.

Deferred tax assets and liabilities are offset when there is a legally enforceable right to set off current tax assets against current tax liabilities, when they relate to income taxes levied by the same taxation authority, and when the Group intends to settle its current tax assets and liabilities on a net basis.

Deferred taxes are not provided on undistributed earnings of subsidiaries when the timing of the reversal of this temporary difference is controlled by Hydro and is not expected to happen in the foreseeable future. This is applicable for the majority of Hydro's subsidiaries.

Share-based compensation

Hydro accounts for share-based compensation in accordance with IFRS 2 Share-based Payment. Share-based compensation expense is measured at fair value over the service period and includes social security taxes that will be paid by Hydro at the settlement date. All changes in fair value are recognized in the income statement.

Employee benefits and post-employment benefits
Payments to employees, such as wages, salaries, social security contributions, paid annual leave and bonus agreements are accrued in the period in which the associated services are rendered by the employee.

Post-employment benefits are recognized in accordance with IAS 19 Employee Benefits. The cost of providing pension benefits under a defined benefit plan is determined separately for each plan using the projected unit credit method. Past service costs are recognized immediately in the income statement. The interest component of the periodic cost is included in Finance expense. Remeasurement gains and losses are recognized in Other comprehensive income.

Contributions to defined contribution plans are recognized in the income statement in the period in which they accrue. Multiemployer defined benefit plans where available information is insufficient to use defined benefit accounting are accounted for as if the plan were a defined contribution plan.

Income statements and statements of comprehensive income
Hydro has elected to present a separate income statement and a separate statement of comprehensive income, rather than a combined statement. Further, Hydro has elected to present an analysis of expenses based on their nature as a common analysis of expenses through Hydro's value chain. Hydro has elected to present a sub-total Earnings before financial items and tax (EBIT). This measure is also used as the main segment profit measure. The share of the profit (loss) in equity accounted investments is included in this sub-total because the majority of such investments are operationally integrated with Hydro's businesses. Results from such investments are managed as part of Hydro's operating activities with significant transactions between the majority of these investments and Hydro. Return on other equity investments is not as closely related to the business activities in Hydro, and classification as finance income thus better reflects the way such investments are managed.

Statements of cash flows
Hydro uses the indirect method to present cash flows from operating activities. Interest and dividends received as well as interest paid is included in cash flows from operating activities. Dividends paid is included in cash flows from financing activities.

Segment information
Hydro identifies its reportable segments and discloses segment information under IFRS 8 Operating Segments.

Note 3 - Changes in accounting principles and new pronouncements

Changes in accounting principles
Hydro implemented IFRS 9 and IFRS 15 as of January 1, 2018.

IFRS 15 Revenue from Contracts with Customers
Hydro implemented IFRS 15 as of January 1, 2018. The new standard is implemented retrospectively with the cumulative effect of initially applying this standard recognized directly to equity at implementation.

IFRS 15 requires us to, for each contract with a customer, identify the performance obligations, determine the transaction price, allocate the transaction price to performance obligations to the extent the contract covers more than one performance obligation, determine whether revenue should be recognized over time or at a point in time, and, finally, recognize revenue when or as performance obligations are satisfied.

Some contracts for sale of goods include an element of freight services, which is considered a separate performance obligation under IFRS 15, and related revenue is recognized over the time of journey. This represents recognition at a later time than under the previous regulations. There were no significant transport contracts under performance as of the time of transition. Some construction type contracts where revenue was recognized over time using IAS 11 Accounting for Construction Contracts in previous years, do not qualify for recognition over time under IFRS 15. For some contracts, mainly where products are delivered to the customer's site as consignment stock, control is concluded to pass to the customer at an earlier time than transfer of risk and rewards as assessed under IAS 18 Revenue. The effect of earlier and later recognition is included in the table below.

IFRS 9 Financial Instruments
IFRS 9 is applied retrospectively. Some transitional effects were recognized in the opening equity at transition, i.e. January 1, 2018 as required or allowed by the standard. IFRS 9 did not lead to any significant changes in timing of recognition or how to measure assets or liabilities and related income and expense. Hydro has classified the portfolio of equity investments that are not part of trading portfolios, which was held at transition, as instruments at fair value through Other Comprehensive Income (FVOCI). All changes in the fair value of those instruments, including an ultimate gain or loss at divestment of the instrument, will be recognized in OCI. Recognized changes to fair value of such investments of NOK 239 million, after tax, will not be recycled in future periods. There will be some changes to presentation and disclosures, however, the impact for Hydro's portfolio of instruments at transition is minor. Some additional risk management strategies related to commodity price

exposure will qualify for hedge accounting, however, Hydro has decided not to apply hedge accounting for any additional risk management activities utilized as of the end of 2017. For one cash flow hedge program for a previous investment project which is deferred in the hedging reserve in equity and reclassified to income over the depreciation period of the asset, the remaining hedging reserve of NOK 60 million was reclassified to reduce the carrying value of the asset and related deferred tax as a basis adjustment.

	IFRS 15		IFRS 9	
Change of accounting principles, amounts in NOK million	Earlier recognition	Later recognition		Effect of change in accounting principles
Current assets	26	8		34
Property, plant and equipment			(87)	(87)
Total assets	26	8	(87)	(54)
Current liabilities		11		11
Deferred tax liabilities	6	(1)	(27)	(22)
Equity attributable to Hydro shareholders	20	(2)	(60)	(43)
Total liabilities and equity	26	8	(87)	(54)

New pronouncements
As of the date of authorization of these financial statements, the IASB has issued IFRS 16 Leases; effective date January 1, 2019, which will be relevant for Hydro. IFRS 16 is endorsed by the EU.

Hydro has decided to implement IFRS 16 retrospectively with the cumulative effect of initially applying the standard recognized at the date of implementation, i.e. January 1, 2019. Further, Hydro will utilize the practical expedient available for measuring leased assets currently accounted for as operating leases at an amount equal to the lease liability, adjusted for any prepaid or accrued lease payments, for close to all lease contracts. Leased assets with a remaining lease period of less than 12 months at transition will be excluded from lease accounting. Further, leases of assets of a low value (small asset leases), mainly such items as PCs, office equipment and similar, will be excluded from lease accounting. When measuring leases, Hydro will include fixed lease payments for extension periods reasonably certain to be used. As a practical expedient, non-lease components will not be separated from lease contracts for most asset classes. For transportation assets, such as vessels used for transportation of material, the operating cost is a significant non-lease component, and will be excluded from lease accounting.

The implementation of IFRS 16 impacts items currently accounted for as operating leases. Hydro does not expect any changes related to finance leases. The implementation of IFRS 16 is expected to increase Hydro’s carrying value of property, plant and equipment by about NOK 3.1 billion, of which about NOK 1.6 billion relates to land and buildings, while the remainder relates to various types of machinery and equipment. The implementation of IFRS 16 will also lead to a shift of periodic cost of about NOK 0.7 billion from Other operating expenses mainly to depreciation and amortization expense, partly to interest expense. Quality assurance of the implementation effect, including completeness of contracts, assumptions for renewal and purchase options, as well as testing of the measurement tools, is still ongoing. Variable lease payments, including service elements related to leases which are fully variable amounts, will be recognized as operating expenses in the periods incurred.

In addition, the IASB has issued IFRIC 23 Uncertainty over Income Tax Treatment; effective date January 1, 2019. The interpretation clarifies how to assess tax positions when there is uncertainty about what the correct understanding of tax laws and regulations is. IFRIC 23 is not expected to have any impact for Hydro at the time of transition.

Note 4 - Measurement of fair value

Hydro measures certain assets and liabilities at fair value for the purpose of recognition or disclosure, see note 2 Significant accounting policies. Recurring fair value measurement is used primarily for financial instruments. Non-recurring fair value measurement is used for transactions, such as business combinations, divestments with non-cash consideration and certain other non-routine transactions. Fair value is estimated using inputs which are to varying degrees objectively observable. Certain items are valued on the basis of quoted prices in active markets for identical assets or liabilities, others are valued on the basis of inputs that are derived from observable prices, while certain positions are valued on the basis of judgmental assumptions that are to a limited degree or not at all based on observable market data.

Financial instruments
The estimated fair value of Hydro's financial instruments is based on market prices and valuation techniques. Valuations are made with the objective to include relevant factors that market participants would consider in setting a price, and to apply accepted economic and financial methodologies for the pricing of financial instruments. References for less active markets are carefully reviewed to establish relevant and comparable data. Extrapolations and other accepted valuation techniques are

employed in periods with few or no transactions, such as for long-term commodity contracts in markets with few observations beyond the short or mid term period.

Hydro's estimated credit spread for similar liabilities is used when determining the fair value of financial instruments where Hydro is net liable. Hydro determines the appropriate discount factor and credit spread for financial assets based on both an individual and on a portfolio assessment.

Equity securities
Fair value for listed shares is based on quoted market prices as of the balance sheet date. Fair value for unlisted shares is based on commonly accepted valuation techniques utilizing significant unobservable data, primarily cash flow-based models. To the extent there are transactions in such shares, the transaction price is assessed and, to the extent comparable to rights embodied in the investment held by Hydro, used for reference. For investments where share holdings are associated with offtake rights and/or obligations or other specific clauses, those rights and obligations are included in the valuation of the equity securities.

Debt instruments
Fair value for listed instruments is based on quoted market prices as of the balance sheet date. Fair value for other debt instruments is estimated primarily through cash flow models using contractual cash flow where relevant, and discount rates reflecting the perceived credit risk and other relevant risks associated with the instrument.

Derivatives
Fair value of financial derivatives with a currency or interest rate as underlying is estimated as the present value of future cash flows, calculated by reference to quoted swap price curves and exchange rates as of the balance sheet date. For derivatives covering a period beyond the liquid period of price curves, the curves are extrapolated using unobservable data.

Fair value of commodity derivatives is measured as the present value of future cash flows, calculated using forward curves and exchange rates as of the balance sheet date. Estimates from brokers and extrapolation techniques are applied for non-quoted periods to achieve the most relevant forward curve. In addition, when deemed appropriate, correlation techniques between commodities are applied. Options are revalued using option pricing models, and credit spreads are applied where deemed to be significant. Markets are assessed to determine whether they are active for the relevant instruments. Currency and interest markets are considered liquid for the periods used for price references, and thus applied unadjusted. For aluminium contracts priced to observations at the London Metal Exchange (LME), liquidity is considered good for the first few years, with fewer transactions for longer durations. For electricity contracts priced to the electricity exchange Nasdaq Electricity Nordic, liquidity is considered good for the first two years. For longer durations there are fewer transactions and higher uncertainty. Similar assessment is made for other markets used for price references. For less liquid periods, adjustments to remove outliers and extrapolation techniques are applied.

Embedded derivatives
Hydro measures embedded forward contracts that are separated from the host contract by comparing the forward curve at contract inception to the forward curve as of the balance sheet date. Changes in the present value of the cash flows related to the embedded derivative are recognized in the balance sheet and in the income statement. Forward curves are established as described above under Derivatives.

Note 5 - Critical accounting judgment and key sources of estimation uncertainty

The application of accounting policies requires that management makes estimates and judgments in determining certain revenues, expenses, assets, and liabilities. The following accounting policies represent areas that are considered critical, involving a significant degree of judgment and complexity.

Impairment of non-current assets
IAS 36 requires that Hydro assess conditions that could cause an asset or a Cash Generating Unit (CGU) to become impaired and to test recoverability of potentially impaired assets. These conditions include internal and external factors such as Hydro's market capitalization, significant changes in Hydro's planned use of the assets or a significant adverse change in the expected prices, sales volumes or raw material cost. The identification of CGUs involves judgment, including assessment of where active markets exist, and the level of interdependency of cash inflows. For Hydro, the CGU is either the individual plant, a group of plants that forms an integrated value chain where no independent prices for the intermediate products exist, a group of plants that are combined and managed to serve a common market, or a group of assets where circumstances otherwise indicate significant interdependencies.

In accordance with IAS 36, goodwill and certain intangible assets are reviewed at least annually for impairment. Other assets are tested for impairment if a loss in value is indicated. When a CGU or an asset is tested for impairment, the recoverable amount is estimated as the higher of the CGU's fair value less cost of disposal, or its value in use. Directly observable market prices rarely exist for our assets, however, fair value may be estimated based on recent transactions on comparable assets, internal models used by Hydro for transactions involving the same type of assets or other relevant information. Calculation of

value in use is a discounted cash flow calculation based on continued use of the assets in its present condition, excluding potential exploitation of improvement or expansion potential.

Determination of the recoverable amount involves management estimates on highly uncertain matters, such as commodity prices and their impact on markets and prices for upgraded products, development in demand, inflation, operating expenses and tax and legal systems. We use internal business plans, quoted market prices and our best estimate of long-term development in commodity prices, currency rates, discount rates and other relevant information. A detailed forecast is developed for a period of three to five years with projections thereafter. Hydro does not include a general growth factor to volumes for the purpose of impairment tests, however, cash flows are generally increased by expected inflation and, where market conditions are depressed, we consider whether full or partial market recovery towards previously observed volumes is justified. Estimated cash flows are discounted with a nominal risk adjusted discount rate. For further information about impairment tests, see note 20 Impairment of non-current assets.

Business combinations
In a business combination, consideration, assets and liabilities are recognized at estimated fair value, and any excess purchase price included in goodwill. Where Hydro had an existing ownership interest in the acquiree, that interest is also reassessed to determine its acquisition date estimated fair value, resulting in an acquisition date gain or loss. In the businesses Hydro operates, fair values of individual assets and liabilities are normally not readily observable in active markets. Estimation of fair values requires the use of valuation models for acquired assets and liabilities as well as ownership interests. Such valuations are subject to numerous assumptions and are thus uncertain. The quality of fair value estimates may impact assessment of possible impairment of assets and/or goodwill in future periods.

Contingent assets and liabilities, uncertain assets and liabilities
Liabilities that are uncertain in timing or amount are recognized when a liability arises from a past event and an outflow of cash or other resources is probable and can be reasonably estimated. Contingent liabilities are possible obligations where a future event will determine whether Hydro will be required to make a payment to settle the liability, or where the size of the payment cannot be determined reliably. Material contingent liabilities are disclosed unless a future payment is considered remote. Evaluation of uncertain liabilities and contingent liabilities and assets requires judgment and assumptions regarding the probability of realization and the timing and amount, or range of amounts, that may ultimately be incurred. Such estimates may vary from the ultimate outcome as a result of differing interpretations of laws and facts.

In relation to perceived non-compliance with laws and regulations, authorities, non-governmental organizations, or others may claim that Hydro is responsible for mitigating actions and compensation. The legal basis for such claims as well as cost calculation and other aspects can be difficult to assess.

Environmental liabilities and asset retirement obligations
Hydro's industrial and mining activities are subject to a wide range of environmental laws and regulations, including end-of-life remediation regulations. The extent of site and off-site contamination, the remediation methods and requirements that relevant environmental authorities may impose, are uncertain. The long-term use of sites, with increasing awareness of effects of contamination in society, a generally lower acceptance of contamination in communities over time, as well as changes in remediation methods and requirements, contributes to the uncertainty in assessing and measuring such obligations. Remediation and closure activities expected to be conducted far into the future are less accurately measured than near-term planned activities. Consequently, there is significant uncertainty inherent in the estimates. A discussion of Hydro's significant provisions for environmental and other liabilities is included in note 35 Provisions. Significant contingent obligations are discussed in note 36 Contingent liabilities and contingent assets.

Taxes
Hydro calculates income tax expense based on reported income in the different legal entities. Deferred income tax expense is calculated based on the differences between the carrying value of assets and liabilities for financial reporting purposes and their respective tax basis that are considered temporary in nature. Valuation of deferred tax assets is dependent on management's assessment of future recoverability of the deferred benefit. Expected recoverability may result from expected taxable income in the future, planned transactions or planned tax optimizing measures, all of which may be uncertain. Economic conditions may change and lead to a different conclusion regarding recoverability. Tax authorities in different jurisdictions may challenge Hydro's calculation of taxes payable from prior periods. Such processes may lead to changes to prior periods' taxable income, resulting in changes to income tax expense in the period of change, as well as interest and fines.

Indirect tax regimes are complex in many jurisdictions and cross-border. Basis for such taxes may differ from actual transaction prices. In some jurisdictions, including Brazil, significant credit amounts are generated for use against future indirect and/or income tax payments. The value of such credits depends on future generation of taxes. Economic conditions and tax regulations may change and lead to a different conclusion regarding recoverability. Tax authorities may challenge Hydro's calculation of taxes and credits from prior periods. Such processes may lead to changes to prior periods' operating or financial expenses to be recognized in the period of change.

Financial instruments
Certain commodity contracts are deemed to be financial instruments under IFRS 9 or to contain embedded derivatives which are required to be recognized at fair value, with subsequent changes in fair value impacting the income statement. Determining

whether contracts qualify as financial instruments at fair value involves evaluation of markets, Hydro's use of those instruments and historic or planned use of physically delivered products under such contracts. Determining whether embedded derivatives are required to be separated and accounted for at fair value involves assessing price correlations and normal market pricing mechanisms for relevant products and market places. Where no directly observable market prices exist, fair value is estimated through valuation models which rely on internal assumptions as well as observable market information such as forward curves, yield curves and interest rates. Market stability impacts the reliability of observed prices and other market information, and consequently, the extent of judgment necessary to estimate appropriate market prices for valuation purposes. Volatility also impacts the magnitude of changes in estimated fair value, which can be substantial, in particular on long-term contracts. Historically, financial and commodity markets have been highly volatile.

Employee retirement plans
Hydro provides both defined benefit employee retirement plans and defined contribution plans. A significant but decreasing share is defined benefit plans. Measurement of pension cost and obligations under such plans requires numerous assumptions and estimates that can have a significant impact on the recognized pension cost and obligation, such as discount rates, turnover rate and mortality, as well as future pension increases and salary levels.

Note 6 - Significant subsidiaries and changes to the consolidated group

Acquisition of Sapa
On July 10, 2017, Hydro entered into a contract to acquire 50 percent of the shares in Sapa AS, which was a joint venture owned 50 percent by Hydro and 50 percent by Orkla, a listed company in Norway. Following completion of the transaction on October 2, 2017, Hydro owns 100 percent of the parent company Hydro Extruded Solutions AS. Hydro's acquisition of Sapa AS in October 2017 resulted in a significant increase in the number of subsidiaries and plants.

Hydro paid a cash consideration of NOK 11,860 million for the 50 percent shares acquired on October 2, 2017, with certain post-closing adjustments made during December 2017 resulting in an additional payment of NOK 46 million for the shares in January 2018, in total NOK 11,906 million. The pricing was based on an agreed enterprise value of NOK 27 billion for 100 percent of Sapa on a cash and debt free basis, adjusted for certain items such as level of working capital and investments made during 2017. The fair value of Hydro’s previously held 50 percent interest in Sapa was measured, using significant unobservable (level 3) input, at NOK 8,906 million, resulting in a total value of Sapa’s net assets of NOK 20,813 million. A remeasurement gain of NOK 2,171 million, including certain items previously recognized in Other Comprehensive Income of NOK 751 million, was recognized in Other income, net, in 2017.

Significant parts of the process of identifying the fair value of assets acquired and liabilities assumed was performed in 2017 and completed during 2018. The provisionally estimated fair value of assets and liabilities of Sapa as well as the final amounts are included in the table below. Adjustments primarily relate to completed valuation of land and some buildings. The value of deferred tax and goodwill have been updated following adjustments to valuation of other items. The changes did not result in significant changes to depreciation or amortization; the prior period has thus not been restated.

Sapa had uncertain and contingent liabilities related to historic environmental issues and an investigation by the United States Department of Justice for which Hydro is entitled to indemnity from the seller. An agreement in principle was reached with the US Department of Justice in March 2019, see note 35 Provisions. The indemnification asset recognized as of December 31, 2018 thus increased by about NOK 160 million from what was recognized as part of the acquisition.

The acquisition resulted in recognition of goodwill in the transaction amounting to NOK 3,580 million, including goodwill recognized in Sapa prior to the acquisition. Significant contributors to the goodwill are synergies in the transaction, the assembled and skilled workforce in the organization as well as the time value of deferred tax liabilities recognized at nominal amounts as required by IFRS. Goodwill is allocated to groups of CGUs benefiting from shared resources such as brands, technology and other intangible assets. These groups of CGUs are managed and reviewed on a combined basis by Business Area management. For the allocation of goodwill and impairment testing, see note 20 Impairment of non-current assets.

Acquired assets and liabilities

Amounts in NOK million	2017 estimate	Adjustments	Final
Cash and cash equivalents	892	-	892
Accounts receivables	8,775	(12)	8,763
Inventories	6,469	-	6,469
Other current assets	233	12	245
Total current assets	16,369	-	16,369
Property, plant and equipment	14,052	922	14,974
Intangible assets	2,897	(130)	2,767
Goodwill	4,119	(539)	3,580
Other non-current assets	1,969	(16)	1,953
Total non-current assets	23,037	236	23,273
Total assets acquired	39,405	236	39,642
Bank loans and other interest-bearing short-term debt	3,556	-	3,556
Other current liabilities	10,081	-	10,081
Total current liabilities	13,637	-	13,637
Long-term debt	64	-	64
Deferred tax liabilities	2,486	287	2,773
Other non-current liabilities	2,365	(51)	2,314
Total non-current liabilities	4,915	236	5,152
Net assets acquired	20,853	-	20,853
Non-controlling interests	40	-	40
Net assets acquired by Hydro	20,813	-	20,813

The results from January to September 2017 for Sapa were reported as result from the 50 percent owned joint venture accounted for under the equity method, no results from the acquired businesses were included in Hydro's consolidated income statement as results from the Group's controlled business as of September 30, 2017.

Hydro has not made any significant acquisitions or divestments during 2018. For one acquisition of an extrusion unit in Brazil, the initial accounting for the business combination is incomplete.

Subsidiaries with significant non-controlling interests

The Hydro group consists of about 200 companies in about 40 countries. Most subsidiaries, including the large operating units in Norway and Germany, are 100 percent owned, directly or indirectly, by Norsk Hydro ASA. Restrictions in the ability to transfer dividend based on reported results and/or equity in the relevant subsidiaries exist in most countries where we operate. In some countries, including Brazil, there are also legal restrictions in our ability to integrate cash holdings in subsidiaries in the group's cash pool. There are non-controlling interests in some subsidiaries. The more significant ones are described below.

Albras

Hydro holds 51 percent of the shares in the Brazilian aluminium smelter Alumínio Brasileiro S.A. (Albras), which is part of Primary Metal. The non-controlling owner has significant influence on certain decisions in the entity, including operational and investment budgets. The non-controlling interests in Albras amounted to NOK 2,721 million as of December 31, 2018 and NOK 2,824 million as of December 31, 2017. Funds held by the entity are not available to the group through cash pool arrangements. Dividends need to be approved by the shareholders jointly. The shareholder agreement supports transfer of dividend to the extent possible under statutory regulations. The smelter produces standard ingots, which are sold to its shareholders, or the entities appointed by the shareholders, in proportion to ownership interest at a price based on prevailing aluminium prices at the London Metal Exchange and product premiums. In response to the regime for indirect taxes in Brazil, an increasing share of the production is sold to domestic customers rather than exported.

Slovalco

Hydro holds 55 percent of the total shares and 60 percent of the voting interest in the Slovac smelter Slovalco a.s, which is part of Primary Metal. The non-controlling owner has significant influence on certain decisions in the entity, including operational and investment budgets. The non-controlling interests in Slovalco amounted to NOK 1,182 million as of December

31, 2018 and NOK 1,036 million as of December 31, 2017. Funds held by the entity are not available to the group through cash pool arrangements. Dividends need to be approved by the shareholders jointly. The shareholder agreement supports transfer of dividend to the extent possible under statutory regulations. The smelter produces metal products, of which the majority is sold to Hydro at a price based on prevailing aluminium prices at the London Metal Exchange and product premiums.

Alunorte
Hydro holds about 92 percent of the shares in the Brazilian alumina refinery Alumina do Norte do Brasil S.A. (Alunorte), which is part of Bauxite & Alumina. The non-controlling owners have limited influence on the operational decisions. The non-controlling interests in Alunorte amounted to NOK 859 million as of December 31, 2018 and NOK 1,167 million as of December 31, 2017. Funds held by the entity are not available to the group through cash pool arrangements. Dividends need to be approved by the shareholders jointly. The shareholder agreement supports transfer of dividend to the extent possible under statutory regulations. The refinery produces alumina, which is sold to its shareholders in proportion to ownership interest at a price based on prevailing aluminium prices at the London Metal Exchange, with a minimum price based on production cost plus a margin, and a fixed maximum price.

The table below summarizes key figures for Albras, the only subsidiary with non-controlling interests considered material, as included in the group financial statements. Fair value adjustments from Hydro’s acquisition of the subsidiary are included. Intercompany transactions and balances are included, and any internal profit and loss in inventory and fixed assets purchased from group companies are not eliminated in the numbers below.

	Albras	
Amounts in NOK million	**2018**	2017
Internal revenue	**3,090**	3,963
External revenue	**4,171**	3,839
Earnings before financial items and tax	**344**	975
Net income	**200**	635
Other comprehensive income	**35**	(18)
Total comprehensive income	**236**	618
Net cash flows from operating activities	**942**	786
Net cash flows from investing activities	**(361)**	(420)
Net cash flows from financing activities	**(407)**	(381)
Cash and cash equivalents	**334**	160
Other current assets	**1,925**	2,442
Non-current assets	**4,383**	5,018
Current liabilities	**(637)**	(1,362)
Non-current liabilities	**(453)**	(497)
Equity attributable to Hydro	**(2,830)**	(2,937)
Equity attributable to non-controlling interests	**(2,721)**	(2,824)
Share of net income attributable to non-controlling interest	**104**	312
Dividends paid to non-controlling interests	**66**	307

Note 7 - Operating and geographic segment information

Hydro identifies its reportable segments and discloses segment information under IFRS 8 Operating Segments, which requires Hydro to identify its segments according to the organization and reporting structure used by management. Operating segments are components of a business that are evaluated regularly by the chief operating decision maker for the purpose of assessing performance and allocating resources. Hydro's chief operating decision maker is the President and CEO. Generally, financial information is required to be disclosed on the same basis that is used by the CEO.

Hydro's operating segments represent separately managed business areas with products serving different markets, or distinct elements of the business separately followed up and reported to the chief operating decision maker. Hydro's reportable segments are the six business areas Bauxite & Alumina, Primary Metal, Metal Markets, Rolled Products, Extruded Solutions, and Energy.

Bauxite & Alumina activities includes bauxite mining activities, production of alumina and related commercial activities, primarily the sale of alumina.

Primary Metal includes primary aluminium production, remelting and casting activities. The main products are comprised of extrusion ingots, foundry alloys, sheet ingot and standard ingot.

Metal Markets includes all sales activities relating to products from our primary metal plants and operational responsibility for Hydro's stand-alone remelters as well as physical and financial metal trading activities.

Rolled Products includes Hydro's rolling mills and the dedicated primary metal plant in Neuss, Germany. The main products are comprised of aluminium foil, strip, sheet, and lithographic plate for application in such sectors as packaging, automotive and transport industries, building and general engineering, as well as for offset printing plates.

Extruded Solutions delivers products within extrusion profiles, building systems and precision tubing, and is present in more than 40 countries. Hydro acquired control with the business as of October 2017, see note 6 Significant subsidiaries and changes to the consolidated group. The previous 50 percent ownership in the business as the joint venture Sapa is also reported as part of the segment now named Extruded Solutions.

Energy includes operating and commercial responsibility for Hydro's power stations in Norway, a trading and wholesale business in Brazil, and energy sourcing for Hydro's world-wide operations.

Other consist of Hydro's captive insurance company Industriforsikring, its industry parks, internal service providers, and certain other activities.

Operating segment information
Hydro uses two measures of segment results, Earnings before financial items and tax - EBIT and EBITDA. EBIT is consistent with the same measure for the group, considering the principles for measuring certain intersegment transactions and contracts described below. Hydro defines EBITDA as Income (loss) before tax, financial income and expense, depreciation, amortization and write-downs, including amortization and impairment of excess values in equity accounted investments. Hydro's definition of EBITDA may be different from other companies.

Because Hydro manages long-term debt and taxes on a group basis, Net income is presented only for the group as a whole.

Intersegment sales and transfers reflect arm's length prices as if sold or transferred to third parties at the time of inception of the internal contract, which may cover several years. Transfers of businesses or fixed assets within or between Hydro's segments are reported without recognizing gains or losses. Results of activities not considered part of Hydro's main operations as well as unallocated revenues, expenses, liabilities and assets are reported together with Other under the caption Other and eliminations.

The accounting policies used for segment reporting reflect those used for the group. The following exceptions apply for intersegment transactions: Internal commodity contracts may meet the definition of a financial instrument in IFRS 9 or contain embedded derivatives that are required to be reported separately and valued at fair value under IFRS 9. However, Hydro considers these contracts as sourcing of raw materials or sale of own production, and accounts for such contracts as executory contracts. Certain other internal contracts may contain lease arrangements that qualify as a finance lease. However, the segment reporting reflects the responsibility allocated by Hydro's management for those assets. Costs related to certain pension schemes covering more than one segment are allocated to the operating segments based either on the premium charged or the estimated service cost. Any difference between these charges and pension expenses measured in accordance with IFRS, as well as pension assets and liabilities are included in Other and eliminations.

The following tables include information about Hydro's operating segments.

Amounts in NOK million	External revenue 2018	External revenue 2017	Internal revenue 2018	Internal revenue 2017	Share of the profit (loss) in equity accounted investments 2018	Share of the profit (loss) in equity accounted investments 2017
Bauxite & Alumina	**14,396**	15,188	**14,152**	10,234	**-**	-
Primary Metal	**7,829**	7,578	**31,605**	28,888	**722**	745
Metal Markets	**42,502**	44,264	**11,735**	6,341	**-**	-
Rolled Products	**26,940**	25,538	**15**	178	**-**	-
Extruded Solutions[1)]	**64,023**	14,083	**61**	70	**53**	812
Energy	**3,673**	2,550	**5,007**	5,155	**(35)**	(7)
Other and eliminations	**14**	18	**(62,576)**	(50,865)	**24**	(24)
Total	**159,377**	109,220	**-**	-	**765**	1,527

Amounts in NOK million	Depreciation, amortization and impairment 2018	Depreciation, amortization and impairment 2017	Earnings before financial items and tax (EBIT)[2)] 2018	Earnings before financial items and tax (EBIT)[2)] 2017	EBITDA 2018	EBITDA 2017
Bauxite & Alumina	**2,095**	2,486	**1,763**	3,704	**3,858**	6,190
Primary Metal	**2,253**	2,026	**2,123**	4,729	**4,267**	6,747
Metal Markets	**101**	95	**886**	485	**986**	579
Rolled Products	**927**	860	**336**	512	**1,263**	1,372
Extruded Solutions[1)]	**1,723**	444	**1,774**	2,522	**3,498**	2,966
Energy	**239**	223	**1,853**	1,531	**2,107**	1,757
Other and eliminations	**30**	28	**(214)**	(1,295)	**(183)**	(1,268)
Total	**7,369**	6,162	**8,522**	12,189	**15,796**	18,344

Amounts in NOK million	Non-current assets 2018	Non-current assets 2017	Total assets[3)] 2018	Total assets[3)] 2017	Investments[4)] 2018	Investments[4)] 2017
Bauxite & Alumina	**31,683**	33,876	**39,450**	41,075	**963**	1,634
Primary Metal	**31,106**	30,740	**44,448**	42,863	**2,724**	3,537
Metal Markets	**1,414**	1,292	**9,844**	7,810	**165**	143
Rolled Products	**9,233**	9,094	**20,057**	19,513	**1,047**	997
Extruded Solutions[1)]	**26,518**	26,174	**43,630**	41,971	**2,390**	22,137
Energy	**5,671**	5,654	**6,990**	6,677	**280**	361
Other and eliminations	**1,232**	1,821	**(2,564)**	3,364	**45**	39
Total	**106,858**	108,643	**161,855**	163,273	**7,614**	28,848

1) The extruded solutions segment includes the business acquired as a 100 percent owned subsidiary in fourth quarter 2017. For the previous periods, the segment includes the same business reported as 50 percent owned joint venture, reported using the equity method. See note 6 Significant subsidiaries and changes to the consolidated group for further information.
2) Total segment Earnings before financial item and tax is the same as Hydro group's total Earnings before financial income and tax. Financial income and financial expenses are not allocated to the segments. There are no reconciling items between segment Earnings before financial items and tax to Hydro Earnings before financial items and tax. Therefore, a separate reconciling table is not presented.
3) Total assets exclude internal cash pool accounts and accounts receivable related to group relief.
4) Additions to property, plant and equipment (capital expenditures) plus long-term securities, intangible assets, long-term advances and investments in equity accounted investments, including amounts recognized in business combinations. In 2018, investments were reduced with certain indirect tax charges in Brazil not completely deducted and claimed at the time of investment. A review of deductibility resulted in reduction of asset costs for Bauxite & Alumina and Primary Metal of NOK 635 million and NOK 145 million, respectively.

The identification of assets, non-current assets and investments is based on location of operation. Included in non-current assets are investments in equity accounted investments; property, plant and equipment (net of accumulated depreciation) and non-current financial assets.

Operating revenues are identified by customer location.

Amounts in NOK million	Revenue		Non-current assets		Investments[1]	
	2018	2017	**2018**	2017	**2018**	2017
Norway	**4,424**	3,094	**22,612**	22,412	**2,667**	2,722
Germany	**21,428**	15,354	**10,875**	11,511	**539**	3,171
France	**8,604**	4,102	**2,733**	2,690	**230**	2,601
United Kingdom	**7,933**	3,932	**1,344**	1,295	**134**	654
Poland	**6,577**	4,618	**725**	543	**280**	476
Spain	**6,017**	4,656	**824**	732	**175**	578
Italy	**5,802**	4,422	**505**	362	**138**	317
The Netherlands	**3,666**	2,687	**1,377**	1,319	**174**	677
Austria	**3,117**	2,324	**397**	298	**129**	291
Sweden	**2,477**	1,545	**821**	805	**135**	808
Belgium	**2,200**	1,394	**1,531**	1,370	**425**	1,188
Czech Republic	**1,992**	1,134	**-**	-	**-**	-
Denmark	**1,761**	1,933	**830**	900	**10**	900
Portugal	**1,258**	883	**133**	172	**(22)**	173
Hungary	**1,159**	1,061	**1,110**	1,329	**(109)**	1,324
Slovakia	**831**	721	**1,519**	1,230	**148**	288
Other	**3,106**	2,051	**233**	212	**49**	55
Total EU	**77,927**	52,818	**24,958**	24,768	**2,435**	13,502
Switzerland	**4,840**	5,031	**79**	157	**-**	1
Turkey	**2,222**	1,827	**2**	2	**-**	2
Other Europe	**1,670**	906	**-**	-	**-**	-
Total Europe	**91,083**	63,675	**47,651**	47,340	**5,102**	16,227
USA	**31,899**	13,225	**9,131**	8,885	**665**	8,244
Canada	**3,125**	742	**2,107**	2,071	**343**	409
Brazil	**7,700**	5,484	**34,518**	37,172	**1,411**	2,551
Mexico	**2,208**	1,023	**242**	222	**8**	195
Other America	**961**	653	**97**	104	**31**	108
Japan	**3,551**	4,277	**3**	2	**-**	-
Singapore	**3,303**	4,586	**2**	2	**-**	2
Qatar	**2,543**	1,957	**11,276**	10,930	**-**	-
China	**2,266**	2,321	**660**	743	**(29)**	714
South Korea	**1,833**	2,135				
India	**1,441**	1,248	**220**	232	**29**	123
Malaysia	**1,087**	832				
Thailand	**894**	838	**-**	-	**-**	-
Taiwan	**881**	986				
Bahrain	**401**	441	**243**	240	**-**	220
Other Asia	**2,498**	3,218	**47**	44	**2**	11
Australia and New Zealand	**821**	767	**661**	656	**52**	45
Africa	**881**	810	**-**	-	**-**	-
Total outside Europe	**68,294**	45,544	**59,207**	61,303	**2,512**	12,621
Total	**159,377**	109,220	**106,858**	108,643	**7,614**	28,848

1) Additions to property, plant and equipment (capital expenditures) plus long-term securities, intangible assets, long-term advances and investments in equity accounted investments, including amounts recognized in business combinations. In 2018, investments were reduced with certain indirect tax charges in Brazil not completely deducted and claimed at the time of investment. A review of deductibility resulted in reduction of asset costs for Bauxite & Alumina and Primary Metal of NOK 635 million and NOK 145 million, respectively.

Note 8 - Board of Directors' statement on executive management remuneration

Board of Directors' statement on executive management remuneration
The statement on the remuneration of the company's Chief Executive Officer (CEO) and other members of the Corporate Management Board has been prepared in accordance with the provisions of the Norwegian Public Limited Companies Act, the Norwegian Accounting Act and the Norwegian Code of Practice for Corporate Governance.

Guidelines for executive management remuneration
Hydro's guidelines for the remuneration of the company's CEO and other members of the Corporate Management Board reflect Hydro's global human resources policy, whereby *"Hydro shall offer its employees an overall compensation package that is competitive and in line with generally accepted industry standards in the country in question. Where appropriate this package should, in addition to the base salary, comprise a performance-based incentive, which combined, should reflect individual performance."*

Process for determination of remuneration
The Board of Directors has appointed a separate compensation committee. The committee currently includes the board chair, deputy chair and one employee-elected board member. The CEO normally participates in the committee's meetings unless the committee is considering issues regarding the CEO. Other representatives of senior management may attend meetings if requested to do so.

The committee functions as an advisory body to the Board of Directors and the CEO, and is primarily responsible for:
- Making recommendations to the Board of Directors based on the committee's evaluation of the principles and systems underlying the remuneration of the CEO and other members of the Corporate Management Board.
- Making recommendations to the Board of Directors based on the committee's evaluation of the overall remuneration of the CEO, including the annual basis for bonus payments and bonus payments actually made.
- Assisting the CEO by consulting on the remuneration of the other members of the Corporate Management Board.
- Advising the Board of Directors and the CEO in remuneration matters which the committee finds to be of material or principal importance for Hydro.
- Overseeing the company's process for succession planning.

The following statement regarding the remuneration of members of the Corporate Management Board will be presented for an indicative vote to the annual general meeting to be held in May 2019, with the exception on the share based Long Term Incentive, which will be presented for a binding vote. The Board of Directors proposes that the principles set forth below shall apply for 2019 and up until the annual general meeting in 2020.

Key principles for determination of remuneration in the coming financial year
The remuneration of members of the Corporate Management Board shall reflect at all times the responsibility of the CEO and the other members of the Corporate Management Board for the management of Hydro, taking into account the complexity and breadth of the company's operations, as well as the growth and sustainability of the company. The total remuneration will be rooted in the company's objective of being competitive, but not a remuneration leader, within the relevant labor markets, while at the same time reflecting Hydro's international focus and presence.

Hydro attaches importance to transparency and to ensuring that remuneration arrangements are developed and implemented in accordance with principles for good corporate governance.

The total remuneration of the CEO and other members of the Corporate Management Board consists of a fixed compensation, performance-based bonus, share-based long-term incentive plan, employee share plan, pension and insurance arrangements and, in certain cases, a severance pay arrangement. The Board of Directors will continue to ensure moderation in executive management remuneration.

Fixed compensation
The fixed compensation provided to members of the Corporate Management Board includes a base salary (which is the main element of remuneration) and benefits in kind such as a company car or car allowance, a telephone, newspapers and other similar benefits. The base salaries of individual members of the Corporate Management Board are evaluated annually in light of the complexity and responsibility of the relevant employee's role and his or her contribution, qualifications and experience, together with conditions in the labor market and general salary trends.

Variable compensation
The company has two plans for variable compensation for members of the Corporate Management Board: a bonus plan and a share-based long-term incentive (LTI) plan. Both plans are evaluated and determined annually by the Board of Directors. Payments under both plans are dependent on Hydro achieving positive underlying earnings before interest and tax (EBIT) for the previous financial year. Payments are not taken into account when determining the basis for pensionable salary.

Annual bonus
The maximum potential payment under the plan is 50 percent of annual base salary for the CEO and 40 percent of annual base salary for other members of the Corporate Management Board.

The annual bonus parameters are established on the basis of overall achievement of the following elements, where (a) and (b) are established in the annual business-planning process with the aim of having parameters that are ambitious and balanced, and objective and measurable, and which reflect the varied nature of Hydro's operations.

(a) Targets related to the company's consolidated underlying EBIT for the CEO and executive vice presidents responsible for the company's staff areas. Executive vice presidents responsible for the company's business areas will have a two-part EBIT target, where 50 percent relates to the company's consolidated, underlying EBIT and 50 percent to their respective business area's underlying EBIT.

(b) Strategic, operational, financial and organizational goals; “key performance indicators” (KPIs). Depending on the business area, these goals can include

- productivity and improvements including optimizing of production and margins
- resource allocation and availability
- cost reduction and control
- investment projects
- technology
- quality control
- environment and climate
- safety and the work environment
- corporate social responsibility
- compliance
- customer relations
- organizational development.

(c) Contributions to the company's development, as well as compliance with and promotion of Hydro's core values (The Hydro Way) and achievement of individual targets.

(d) The Board of Directors' overall, discretionary assessment of the CEO. The CEO's overall, discretionary assessment of other members of the Corporate Management Board.

The combined weighting of (a) and (b) is 60 percent, while (c) and (d) combined are weighted 40 percent.

Long-term incentive (LTI)
The maximum potential payment under the LTI plan is 30 percent of annual base salary (the same for the CEO and other members of the Corporate Management Board). Payment is determined on the basis of overall achievement of the following elements:

(a) Average of the past three years' return on capital employed, measured against the company's internal return target.

(b) The Company's total shareholder return (TSR) measured against a weighted average of TSR for comparable companies.

With effect from 2019, the return element in (b) has been changed from return on capital employed to TSR.

Recipients of LTI payments are required to invest the net payment amount (after tax) in Hydro shares with a lock-in period of three years. Any holder of such shares who voluntarily terminates their employment during such a three-year period must pay to the company an amount equal to the after-tax value of the relevant shares at or around the last day of employment.

The company does not offer options or other similar arrangements.

Other share-based compensation
The CEO and other members of the Corporate Management Board appointed on Norwegian employment terms are eligible to participate in Hydro's discounted employee share purchase plan on the same terms as all other eligible employees (as described in Note 18 Employee remuneration).

Pensions
Company pension plans
Hydro has two pension plans in Norway: defined benefit (closed to new members in 2010) and defined contribution. As of January 1, 2019, 695 employees in Norway, including the CEO and two members of the Corporate Management Board, are members of the defined benefit plan. Other employees in Norway, including seven members of the Corporate Management Board, are members of the defined contribution plan.

The defined contribution plan stipulates a contribution to the plan of amounts equal to 6 percent of salary between 0 and 7.1G (G = the Norwegian National Insurance basic amount) and 20 percent of salary between 7.1G and 12G. The defined benefit plan implies a pension right of approximately 65 percent of pensionable salary subject to full service period (minimum 30 years). A compensation plan has been established for employees who have been transferred from the defined benefit plan to the defined contribution plan and for whom a deficit in pension capital resulting from the transfer has been estimated.

Hydro Extruded Solutions AS (formerly Sapa AS) has its own defined contribution pension plan with other contribution rates. This plan covers all of this company's employees appointed on Norwegian employment terms.

12G plan
Hydro closed the 12G plan funded through operations for earning pension on the portion of any salary exceeding 12G effective December 31, 2016. Employees with a salary above 12G on that date, including the CEO and six other members of the Corporate Management Board, remain in the plan.

For employees with a defined contribution plan, the 12G plan stipulates that an amount equivalent to 20 percent of the portion of salary exceeding 12G is allocated as a vested (pension) right. For employees with a defined benefit plan, the 12G plan stipulates that the portion of salary exceeding 12G is included in the final salary that forms the basis for calculating pension. New employees after December 31, 2016, including new members of the Corporate Management Board (recruited internally or externally), have not been included in the 12G plan. As of January 1, 2019, the Corporate Management Board has three members who came from Sapa AS (now Hydro Extruded Solutions AS). These members earned pension on the portion of salary above 12G in Sapa, and an agreement has been entered into with each of them regarding an annual cash amount to be paid as compensation for the loss of such earnings.

Hydro Extruded Solutions AS has its own plan funded through operations for earning pension on the portion of any salary exceeding 12G.

Early retirement plans
The company's early retirement plans are closed to new members. Employees who were included in the plans at the time of closing, including members of the Corporate Management Board, are still covered by the plans (see below).

The CEO and two members of the Corporate Management Board have the right to retire with pension after the age of 62. In the case of the CEO, the Board may request him to retire. From the age of 62, the pension will make up 60 percent of pensionable salary. From the age of 65, the entitlement is 65 percent of pensionable salary up until the age of 67. Four other members of the Corporate Management Board have the same right to retire at the age of 65.

The pensionable salaries of the CEO and the two abovementioned members of the Corporate Management Board have been capped. Following the adjustment of the National Insurance Scheme's basic amount, they are capped as of 1 January, 2019 at NOK 7 584 498 and 4 652 660, respectively. These caps currently have no real effect as pensionable income is below these levels.

Age limit
The upper age limit for employment with Hydro in Norway is 70 years.

Insurance
The CEO and other members of the Corporate Management Board are covered by insurance arrangements applicable to Hydro employees with the rank of vice president or higher.

Termination agreement
Severance pay
In the event the CEO's employment is terminated unilaterally by Hydro, the CEO has a contractual right to severance pay for 12 months, but not beyond the age of 62.

Two members of the Corporate Management Board have a similar arrangement as the CEO, i.e. right to severance pay for 12 months, but without the limitation of 62 years. Other members of the Corporate Management Board have a right to severance pay for six months.

None of the Corporate Management Board's employment contracts give the right to severance pay if the employee has initiated the termination of employment.

Loss of severance pay
The CEO's severance pay is forfeited if there are grounds for summary dismissal. For other members of the Corporate Management Board, severance pay is forfeited in the event of gross breach of duty and/or other material breaches.

Reduction of severance pay
The CEO and five members of the Corporate Management Board will have their severance pay reduced in whole or in part by other income. The other four members of the Corporate Management Board have contracts that include clauses stating that other income will not reduce severance pay.

Notice period
All members of the Corporate Management Board have a six-month notice period.

General
The company has no specific guidelines for severance packages, but when recruiting to corporate management in recent times, it has followed a practice whereby the total of salary during the notice period and severance pay shall not exceed 12 months' salary.

Members of the Corporate Management Board outside Norway
For members of the Corporate Management Board outside Norway, base salary and other employment conditions are determined in accordance with Hydro's global human resources policy and local industry standards and accords generally with the remuneration principles applicable to the other members of the Corporate Management Board.

Silvio Porto resigned as head of Hydro's business area Bauxite & Alumina on March 5, 2018. He was temporarily replaced by Hydro's CFO, Eivind Kallevik, until John Thuestad took over as new head of Bauxite & Alumina on June 1, 2018. Kallevik and Thuestad are covered by the preceding sections of this statement. Thuestad also has a retention bonus related to the position in Bauxite & Alumina.

Key principles for determining compensation during the previous financial year
The compensation of the CEO and the other members of the Corporate Management Board for financial year 2018 was based on the guidelines presented at the annual general meeting in 2018.

In September 2018, the Board of Directors decided to adjust the CEO's base salary from NOK 6 391 000 to NOK 6 710 000 with effect from January 1, 2018, to reflect the expanded scope of the business following the acquisition of Sapa in October 2017.

Bonus and LTI payments to the Corporate Management Board for 2017 were determined and paid in 2018. Bonuses for 2018 were determined and paid in March 2019, while LTI for 2018 will first be determined and paid during the first half of 2019. All bonus and LTI payments are determined according to the principles stated above. See also Note 9 – Management remuneration.

Note 9 - Management remuneration

Corporate management board members' salaries and other benefits, number of LTI-shares allocated, as well as Hydro share ownership as of December 31, 2018 and 2017 are presented in the table below. Amounts presented for individuals appointed to, or stepping down from, a position in the Corporate Management Board from or to another position in Hydro, includes fixed compensation for the whole year. Unless otherwise stated, Hydro did not have any loans to or guarantees made on behalf of any of the corporate management board members in 2018 and 2017.

Name	Base salary[1), 2)]	Maximum bonus potential[1), 2)]	Salary paid[1), 3)]	Other benefits paid[1), 3)]	Compen-sation pension paid[1), 3)]	Bonus earned[1), 3)]	Long-term incentive (LTI) earned[1), 3)]	Pension benefits[1), 4)]	LTI-shares allocated[3)]	Hydro share owner-ship[5)]
2018										
Svein Richard Brandtzæg	6,710	3,355	6,807	267	-	1,707	593	5,836	12,207	244,125
Eivind Kallevik[6)]	3,506	1,402	4,369	270	48	729	310	888	6,494	57,472
John Thuestad[7)]	6,087	1,166	7,025	542	298	793	251	374	-	20,443
Hilde Aasheim	3,433	1,373	3,547	219	-	787	304	2,434	6,359	89,089
Kjetil Ebbesberg	3,991	1,561	4,112	636	150	733	322	940	5,826	54,126
Egil Hogna[8)]	5,416	2,166	9,094	275	1,084	1,411	479	(58)	2,508	42,951
Arvid Moss	3,194	1,278	3,255	252	-	912	283	2,979	5,917	153,563
Anne-Lene Midseim[9)]	2,554	1,022	2,615	563	110	531	226	759	4,731	26,395
Inger Sethov[9)]	2,341	936	2,419	566	146	487	207	725	4,336	23,963
Katarina Nilsson[9) 10)]	2,680	1,072	3,291	769	236	591	237	135	1,242	1,685
Silvio Porto[11)]	3,291	483	1,874	516	-	411	-	111	8,869	-
2017										
Svein Richard Brandtzæg	6,391	3,196	6,643	482	-	2,364	1,248	3,619	20,351	231,475
Eivind Kallevik	3,400	1,360	3,287	276	47	1,040	664	1,624	8,222	50,535
Silvio Porto[11)]	3,645	5,823	3,722	1,102	-	4,031	712	234	-	-
Hilde Aasheim	3,329	1,332	3,439	218	-	1,017	650	2,361	8,833	82,287
Kjetil Ebbesberg	3,955	1,515	3,955	708	146	695	688	1,224	8,715	47,857
Egil Hogna[8)]	5,253	525	2,595	69	265	401	256	134	-	20,000
Arvid Moss	3,098	1,239	3,164	275	-	881	605	2,745	8,222	147,203
Anne-Lene Midseim	2,477	991	2,552	162	107	758	484	933	6,571	21,221
Inger Sethov	2,270	908	2,338	268	142	694	443	891	6,012	19,184
Katarina Nilsson[10)]	2,600	260	1,207	140	58	179	127	33	-	-
Hanne Simensen[12)]	2,477	743	2,572	264	95	550	363	913	6,571	19,646

1) Amounts in NOK thousand. Amounts paid by subsidiaries outside Norway have been translated to NOK at average rates for each year.

2) Annual base salary per December 31, or per the date of stepping down from the Corporate Management Board. Maximum bonus potential is for the year presented, and for the period as corporate management board member.

3) Salary is the amount paid to the individual during the year presented, and includes vacation pay. Other benefits is the total of all other cash and non-cash related benefits received by the individual during the year presented and includes such items as the taxable portion of inurance premiums, car and mileage allowances and electronic communication items. For most individuals, compensation pension is the amount paid to compensate for future pension shortfall estimated at the time of transition from Hydro's defined benefit pension plans to the defined contribution plan in line with an arrangement applicable to all affected employees in Norway. For John Thuestad, Egil Hogna and Katarina Nilsson, compensation pension is the amount paid to compensate for lower pension benefits in Hydro compared to those of former employer Sapa AS (now Hydro Extruded Solutions AS). Bonus is the amount earned in the year presented, including vacation pay, based on performance achieved as corporate management board member. The LTI plan benefit reflects gross (pre-tax) amounts earned in the year presented, and results in LTI shares allocated in the following year. For 2018, the LTI benefits reported represent estimates. For 2017, the LTI benefits reported have been updated with final numbers. For corporate management board members on net salary employment contracts, benefits have been converted to estimated gross (pre-tax) amounts.

4) Pension benefits include the estimated change in the value of defined pension benefits, and reflects both the effect of earning an additional year's pension benefit and the adjustment to present value of previously earned pension rights (interest element). It is calculated as the increase in the Defined Benefit Obligations (DBO) calculated with stable assumptions. Pension benefits also include contributions to defined contribution plans.

5) Hydro share ownership is the number of shares held directly by the corporate management board member and any shares held by close family members and controlled entities. Hydro share ownership is as of December 31, or per the date of stepping down from the Corporate Management Board.

6) From March 5 until June 1, 2018, Eivind Kallevik was appointed interim EVP and Head of Bauxite & Alumina busines area, for which he received an extra remuneration of NOK 750 thousand that is included in column Salary paid in the table above: During this period, Kallevik remained in his position as CFO.

7) John Thuestad became member of the Corporate Management Board as of June 1, 2018. From this date, Thuestad has a retention agreement that vests progressively over a 60-month period. Thuestad earned an estimated NOK 739 thousand under this agreement in 2018. Thuestad also had a retention agreement from 2017, as former member of Sapa's corporate management team, that vested after 6 months in April 2018. Thuestad earned NOK 873 thousand under this agreement in 2018. These amounts are included in column Salary paid in the table above.

8) Egil Hogna became member of the Corporate Management Board as of October 2, 2017. From this date, and as former member of Sapa's corporate management team, Hogna had a retention agreement that vested after 12 months. Hogna earned NOK 3,940 thousand and NOK 1,313 thousand under this agreement in 2018 and 2017, respectively. These amounts are included in column Salary paid in the table above.

9) For work regarding the Alunorte situation in Brazil, Anne-Lene Midseim, Inger Sethov and Katarina Nilsson received an extra compensation of NOK 300 thousand, NOK 300 thousand and NOK 200 thosand, respectively.These amounts are included in column Other benefits paid in the table above.

10) Katarina Nilsson became member of the Corporate Management Board as of October 2, 2017. From this date, and as former member of Sapa's corporate management team, Nilsson had a retention agreement that vested after 6 months. Nilsson earned NOK 494 thousand and NOK 546 thousand under this agreement in 2018 and 2017, respectively. These amounts are included in column Salary paid in the table above. Katarina Nilsson stepped down from the Corporate Management Board as of January 7, 2019.

11) Silvio Porto stepped down from the Corporate Management Board as of March 5, 2019, and left Hydro as of July 31, 2019. In addition to the benefits included in the table above, Porto received certain benefits at termination, including statutory benefits, amounting to NOK 1,649 thousand. Porto was not required to make any payments to Hydro for non-vested LTI shares at termination of employment. In addition to the performance related pay arrangement for all members of the Corporate Management Board, Porto had a cash-paid long-term incentive which was payable over three years with payments partly dependent on salary levels and business results in the following two years, included in bonus. The reported bonus amounts are final, and prior year estimate has been updated.

12) Hanne Simensen stepped down from the Corporate Management Board as of October 2, 2017. Under the long-term incentive for 2017 settled in 2018, Simensen received 3,548 shares.

Note 10 - Board of Directors and Corporate Assembly

Board of Directors' remuneration and share ownership

Total board fees and individual board member fees for 2018 and 2017, and outstanding loans and board member share ownership as of December 31, 2018 and 2017, are presented in the tables below.

Board of Directors' fees

Amounts in NOK thousand	**2018**	2017
Fees and other remuneration - normal board activities	**3,521**	3,419
Fees - audit committee	**599**	531
Fees - compensation committee	**293**	286
Total fees for board services provided to Hydro during the year	**4,413**	4,236

	Board fees[1]		Outstanding loans[1) 2)]		Number of shares [3)]	
Board member / observer	**2018**	2017	**2018**	2017	**2018**	2017
Dag Mejdell [4)]	**780**	740	**-**	-	**35,000**	35,000
Irene Rummelhoff[5)]	**489**	478	**-**	-	**5,000**	5,000
Finn Jebsen[6)]	**554**	541	**-**	-	**53,406**	53,406
Thomas Schulz	**351**	343	**-**	-	**-**	-
Liselott Kilaas[7)]	**282**	-	**-**		**-**	
Marianne Wiinholt[8)]	**483**	418	**-**	-	**-**	-
Arve Baade[9) 10)]	**88**	-	**-**		**4,347**	
Sten Roar Martinsen[10) 11)]	**439**	429	**-**	-	**6,086**	5,643
Svein Kåre Sund[10) 12)]	**384**	200	**5**	49	**5,651**	5,208
Tor Egil Skulstad[10) 13)]	**-**	-	**-**	-	**443**	-
Liv Monica Stubholt[14)]	**201**	472	**-**	-	**-**	-
Billy Fredagsvik[10) 15)]	**362**	418	**21**	87	**5,030**	4,587
Ove Ellefsen[10) 16)]	**-**	197		-		8,972
Total	**4,413**	4,236	**26**	137	**114,963**	117,816

1) Amounts in NOK thousand.
2) Loans are extended to board members who are also Hydro employees under an employee benefit scheme available to all employees in Norway. Loans as of December 31, 2018 and 2017 for board members as of December 31, 2018 and 2017; otherwise loans are as of the date the individual stepped down from the Board of Directors. At the end of 2018, the loan to Svein Kåre Sund had an interest of 5.9 percent, and was repaid in January 2019. As of the date of stepping down from the Board of Directors, the loan to Billy Fredagsvik had an interest rate of 5.9 percent, and the loan was repaid by the end of 2018. All payments have been made in a timely fashion and in accordance with the agreed payment schedule. Loans have not been extended to close members of family and controlled entities.
3) Number of shares owned as of December 31, 2018 and 2017 for board members as of December 31, 2018 and 2017; otherwise it is the number of shares owned as of the date the individual stepped down from the Board of Directors. Shareholdings disclosed include shares held by close members of family and controlled entities, in addition to shares held directly by the board member.
4) Chariperson of the board and chairperson of the board compensation committee.
5) Deputy chairperson of the board and member of the board compensation committee.
6) Chairperson of the board audit committee.
7) Member of the board as of May 23, 2018. Member of the board audit committee as of June 12, 2018.
8) Member of the board audit committee as of June 7, 2017.
9) Member of the board as of October 1, 2018.
10) Employee representative on the board elected by the employees in accordance with Norwegian Company Laws. As such, these individuals are also paid regular salary, remuneration in kind and pension benefits that are not included in the table above.
11) Member of the board compensation committee.
12) Member of the board as of May 23, 2017. Member of the board audit committee as of October 23, 2018.
13) Observer on the board as of October 2, 2017.
14) Member of the board and the board audit committee until May 23, 2018.
15) Member of the board audit committe as of June 7, 2017. Member of the board and the board audit committee until September 30, 2018.
16) Member of the board and the board audit committee until May 23, 2017.

The remuneration to the Board of Directors consists of the payment of fees and travel compensation. Travel compensation is paid to members living outside Scandinavia who attend meetings in person, with an amount of NOK 10,300 (2017: NOK 10,000) per meeting. Board members do not have any incentive or share-based compensation. Hydro has not made any guarantees on behalf of any of the board members. The only board members with loans from Hydro are the employee-elected members of the board.

Fees are based on the position of the board members and board committee assignments. Annual fees for 2018 for the chairperson of the board, deputy chairperson and directors are NOK 663,000 (2017: NOK 626,000), NOK 401,000 (2017: NOK 392,000) and NOK 351,000 (2017: NOK 343,000), respectively. The chairperson of the audit committee and the chairperson of the compensation committee receive an additional NOK 203,000 (2017: NOK 198,000) and NOK 117,000 (2017: NOK 114,000) annually in fees, respectively, and audit and compensation committee members receive NOK 132,000 (2017: NOK 129,000) and NOK 88,000 (2017: NOK 86,000) annually, respectively, for their participation on these committees. No fees are paid to the board observer.

Corporate Assembly
Corporate Assembly members owned 34,597 shares as of December 31, 2018. Loans to employees who are members of the Corporate Assembly were extended under an employee benefit scheme that is available to all employees in Norway. Loans outstanding to Corporate Assembly members who are also Hydro employees totaled NOK 419 thousand as of December 31, 2018. The interest rates on these loans are 2.50 percent and 5.90 percent, with a repayment period between three and 12 years.

Note 11 - Related party information

As of December 31, 2018, The Norwegian state had ownership interests of 34.6 percent of total shares outstanding (2017:34.7 percent) in Hydro through the Ministry of Trade, Industry and Fisheries. In addition, Folketrygdfondet, which manages the Government Pension Fund – Norway[15] held 6.8 percent (2017: 6.5 percent). There are no preferential voting rights associated with the shares held by the Norwegian State. Hydro has concluded that the Norwegian state's shareholding represents significant interest in Hydro, and that the State thus is a related party.

The Norwegian state has ownership interests in a substantial number of companies. The ownership interests in 75 companies are managed by the ministries and covered by public information from the Ministry of Trade, Industry and Fisheries[16]. We have not assessed which of these companies that are controlled by the State. Hydro has business transactions with a number of these companies, including purchase of power from Statkraft SF and bank services from DNB ASA. Generally, transactions are agreed independently of the possible control exercised by the State.

The public enterprise Enova, which supports new energy and climate-related technology development in Norway, decided in June 2014 to contribute up to NOK 1.56 billion to Hydro's pilot project for new electrolysis technology at Karmøy, Norway. The contribution was approved by the European Free Trade Association, EFTA, in February 2015 with the first payment in July 2015. The grant has been paid over the preparation, building and commissioning period. As of the end of 2018, a total of NOK 1.56 million was received, representing the full grant.

A significant share of Hydro's defined benefit post-employment plans is managed by the independent pension trust, Norsk Hydro Pensjonskasse. Employees managing and operating the pension trust are employees of Norsk Hydro ASA. Their salaries and other benefits are reimbursed by the pension trust on a monthly basis, in total NOK 8 million for both 2018 and 2017. Further, the pension trust is located in Hydro's head office. Office costs, including heating and administrative services and other administrative services, are charged with a total of NOK 6 million for 2018 and NOK 2 million for 2017.

The pension trust owns some of the office buildings rented by Hydro. The current rental arrangement was entered into in 2015 representing a partial continuation of a rental agreement from 2006, and priced based on market price benchmarks at the time of the agreement in 2006. Hydro has paid a rental of NOK 68 million and NOK 60 million for 2018 and 2017, respectively. The initial term of the rental contract expires in February 2022 after exercise of a one-year extension option. The contract includes an extension option for an additional five-year period. In addition, compensation related to cancellation of a previous contract was paid with NOK 83 million and NOK 81 million for 2018 and 2017, respectively. The compensation arrangement expires in 2021. The remaining provision for the compensation arrangement as of December 31, 2018 was NOK 219 million. As of the end of 2018, Hydro’s outstanding balance towards Norsk Hydros Pensjonskasse was NOK 19 million.

The members of Hydro's board of directors during 2018 and 2017 are stated in note 10 Board of Directors and Corporate Assembly, where their remuneration and share ownership is outlined. Some of the board members or their close members of family serve as board members or executive directors in other companies. In addition, some members of Hydro's corporate management board or their close members of family serve as board members in other companies. Hydro has transactions with some of those companies; however, have not identified any transactions where the relationship is known to have influenced the transaction. Liv Monica Stubholt, a Board member until May 2018, is partner in the Norwegian law firm Advokatfirmaet Selmer DA. Selmer has had assignments for Hydro resulting in fees of NOK 0.5 million in the period January to May, 2018 and NOK 2.0 million in 2017. Stubholt has not been involved in these services to Hydro. Some close family members of members of Hydro's management are employed in non-executive positions in Hydro.

[15] Shareholding is based on information from the Norwegian Central Securities Depositary (VPS) as of December 31, 2018 and 2017. Due to lending of shares, an investor’s holdings registered in its VPS account may vary.
[16] According to information on the Government web site www.regjeringen.no, state ownership.

Hydro's significant joint arrangements and transactions with those entities are described in note 32 Investments in joint arrangements and associates. Hydro has joint arrangements with a number of other companies. Generally, the relationships are limited to a combined effort within a limited area. Hydro considers the joint venture partners as competitors in other business transactions, and do not see these relationships as related party relationships.

Transactions with related parties are at arm’s length principles.

Note 12 - Financial and commercial risk management

Hydro is exposed to market risks from fluctuations in the price of commodities bought and sold, prices of other raw materials, currency exchange rates and interest rates. Price volatility, which may be significant, can have a substantial impact on Hydro's results. Market risk exposures are evaluated based on a holistic approach in order to take advantage of offsetting positions and to manage risk on a net exposure basis. Natural hedging positions are established where possible and economically viable. Hydro uses financial derivatives to some extent to manage financial and commercial risk exposures. Hydro's main policy to manage market volatility is to keep a strong financial position. Hydro's market risk strategy is materially unchanged in 2018 compared to previous years.

Commodity price risk exposure

Aluminium

Hydro produces primary aluminium and aluminium casthouse products, both based on primary aluminium and remelted aluminium, and fabricated aluminium products. Hydro also engages in sourcing and trading activities to procure raw materials and primary aluminium for internal use and for resale to customers. These activities serve to optimize capacity utilization, reduce logistical costs and strengthen our market positions. Hydro also participates in trading activities within strict volume and risk limits.

Hydro enters into future contracts on the London Metal Exchange (LME) mainly for two purposes. The first is to achieve an average LME aluminium price on smelter production. Second, because Hydro's downstream businesses, remelting, and the sale of third-party products are based on margins above the LME price, Hydro seeks to offset the metal price exposure when entering into customer and supplier contracts with corresponding physical or derivative future contracts at fixed prices (back-to-back hedging). Hydro manages these exposures on a portfolio basis, taking LME positions based upon net exposures within given limits. Aluminium price volatility can result in significant fluctuations in earnings as the derivative positions are marked to their market value with changes to market value recognized in the income statement, while the underlying physical metal transactions normally are not marked-to-market, except for those included in trading portfolios. The majority of Hydro's LME contracts mature within one year.

Hydro's sales of primary aluminium, aluminium casthouse products and fabricated aluminium products include a premium above the LME aluminium price. The pricing of these premiums can be volatile, and is related to physical demand and supply, with regional and product-related differences. Over the later years, these premiums have been a higher share of the revenue than historic averages. There are limited possibilities for hedging future premiums, except for standard ingot premiums, for which a forward market exists. Hydro has from time to time entered into contracts for standard ingot premiums to mitigate risk in sales contracts.

In order to secure cash flow or margins for specific projects or special circumstances, Hydro might enter into futures contracts on a longer-term basis. In these cases, hedge accounting has normally been applied.

Bauxite and alumina

Hydro's production of alumina normally exceeds the alumina consumption in its primary aluminium production. In addition, Hydro has entered into long-term agreements to purchase alumina from third parties. In 2018 and into 2019, Hydro’s production at Alunorte is limited by the production embargo, leading to higher purchases in the spot market. The majority of purchase and sale contracts are priced with reference to the Platts alumina price index, a spot market price index.

Hydro is a producer and consumer of bauxite. Hydro's need for bauxite is secured through long-term contracts as well as by own production. The purchasing contracts have links to the LME aluminium price and to the Platts alumina price index. Hydro has a limited volume of excess bauxite from long-term sourcing contracts, which is sold under medium and short-term contracts with prices linked to the alumina price index or open price negotiations.

Electricity

Hydro is a large power consumer with significant power production. Hydro's consumption is mainly secured through long-term contracts with power suppliers and through Hydro's own production in Norway. Hydro's own production is influenced by hydrological conditions which can vary significantly. The net power position in Norway is balanced out in the Nordic power market. In order to manage and mitigate risks related to price and volume fluctuations, Hydro utilizes physical contracts and derivatives including future contracts, forwards and options. Hydro also participates in trading activities within strict volume and risk limits.

A significant part of Hydro's power purchase contracts is linked to aluminium prices in order to mitigate market price risk related to the sales of its aluminium products. These contract elements are separated from their host contracts and accounted for as derivatives. Further, some power contracts in Norway are priced in Euro. There is no consensus that the Euro is a commonly used currency in the relevant market, the euro price clauses are thus accounted for separately as currency forwards.

Other raw materials
Hydro is party to both long-term and short-term sourcing agreements for a range of raw materials and services with both fixed and variable prices. Such agreements include pitch, petroleum coke, caustic, natural gas, coal, fuel oil and freight. The number of purchasing agreements with prices linked to the price of other commodities such as aluminium is limited and the fair value exposure is considered to be immaterial.

Foreign currency risk exposure
The prices of Hydro's upstream products bauxite, alumina and primary aluminium, are mainly denominated in US dollars. Margins for mid- and downstream products are mainly priced in US dollars and Euro. Further, the prices of major raw materials used in Hydro's production processes, are quoted in US dollars in the international commodity markets. Hydro also incurs local costs related to the production, distribution and marketing of products in a number of different currencies, mainly Norwegian Krone, Brazilian Real, Euro and US dollar.

Hydro's primary underlying foreign currency risk is consequently linked to fluctuations in the value of the US dollar and Euro versus the currencies in which significant costs are incurred. In addition, Hydro's results and equity are influenced by value changes for the functional currencies of the individual entities and the Norwegian Krone as the Group's presentation currency.

To mitigate the impact of exchange rate fluctuations, long-term debt is mainly maintained in currencies reflecting underlying exposures and cash generation, while considering attractiveness in main financial markets. To reduce the effects of fluctuations in the US dollar and other exchange rates, Hydro also uses foreign currency swaps and forward currency contracts from time to time.

Foreign currency risk exposure in financial instruments
Short-term receivables and payables are often held in currencies other than the functional currency of the unit. Fluctuations between the functional currency and the currency in which the receivable or payable is denominated are reported in Financial expense. Borrowings and deposits may be denominated in other currencies than the functional currency of the unit. Fluctuations between the functional currency and the instrument's currencies, both short and long term, impact the recognized value of the debt or deposit, and are reported in Financial expense. Embedded currency derivatives in non-financial contracts, including the Euro priced electricity contracts discussed above, contains a currency exposure with changes to the fair value of the embedded derivative included in Financial expenses. Investments in equity and debt instruments of other entities are often impacted by changes in currency exchange rates. To the extent such investments are carried at fair value, the currency changes are included in the changes of fair value and reported as an integral part of such changes.

Interest rate exposure
Hydro is exposed to changes in interest rates, primarily as a result of financing its business operations and managing its liquidity in different currencies. Cash and other liquid resources, as well as debt, are currently mainly held in Norwegian Krone, Swedish Krone, Euro, US dollars and Brazilian real. The corresponding interest rate exposures are consequently related to Norwegian Krone, Swedish Krone, Euro, US dollar and Brazilian real short-term rates.

Financial instruments and provisions are also exposed to changes in interest rates in connection with discounting of positions to present value. See sensitivity analysis of financial instruments in note 13 Financial instruments.

Credit risk management
Hydro manages credit risk by setting counterparty risk limits and establishing procedures for monitoring exposures and timely settlement of customer accounts. Prepayments or guarantees are required where credit risk is outside the limits set for the relevant counterpart. Hydro is also monitoring the financial performance of key suppliers in order to reduce the risk of default on operations and key projects. Our overall credit risk exposure is reduced due to a diversified customer base representing various industries and geographic areas. Enforceable netting agreements, guarantees, and credit insurance, also contribute to a lower credit risk.

Credit risk arising from derivatives is generally limited to net exposures. Exposure limits are established for financial institutions relating to current accounts, deposits and other obligations. Credit risk related to commodity derivatives is limited by settlement through commodity exchanges such as the London Metal Exchange, Nasdaq, and banks. Current counterparty risk related to the use of derivative instruments and financial operations is considered limited.

Liquidity risk
Volatile commodity prices and exchange rates as well as fluctuating business volumes and inventory levels can have a substantial effect on Hydro's cash positions and borrowing requirements.

To fund cash deficits of a more permanent nature Hydro will normally raise equity, long-term bond or bank debt in available markets.

Repayments of long-term debt are disclosed in note 34 Short and long-term debt. Further, all other financial liabilities, such as trade payables, with the exception of derivatives, have a final maturity date within one year. An overview of estimated gross cash flows from derivatives accounted for as liabilities and assets is presented below. Many of these assets and liabilities are offset by cash flows from contracts not accounted for as derivatives.

Risk of significant cash payments or margin calls related to derivative instruments is limited due to strict volume limits, value-at-risk and tenor limits for relevant trading activities.

Information about derivatives and other financial instruments held, including sensitivity analysis, is presented in note 13 Financial instruments.

Expected gross cash flows from derivatives accounted for as financial liabilities and financial assets, respectively, as of end of year:

	December 31, 2018		December 31, 2017	
Amounts in NOK million	Liabilities	Assets	Liabilities	Assets
2018			(456)	526
2019	(314)	580	(47)	47
2020	(45)	47	(14)	12
2021	(1)	1		
Total	(361)	628	(517)	585

The cash flows above are to a large extent subject to enforceable netting agreements reducing Hydro's exposure substantially.

For additional information on contracts accounted for at fair value, see note 14 Derivative instruments and hedge accounting.

Note 13 - Financial instruments

Financial instruments, and contracts accounted for as such, are in the balance sheet included in several line items and classified in categories for accounting treatment.

The below specification relates to financial statement line items containing financial instruments. Information for 2018 is classified and measured in accordance with IFRS 9, while information for 2017 is classified and measured in accordance with IAS 39. See note 3 Changes in accounting principles and new pronouncements.

Instruments included in Financial instruments at FVTPL in 2017 are in 2018 classified partly as Financial instruments at FVTPL and partly as Derivatives at FVTPL. Instruments included in the category Loans and receivables in 2017 are classified as Debt instruments at amortized cost in 2018. Instruments included in the category Other financial liabilities in 2017 are classified as Financial liabilities at amortized cost in 2018. Investments classified as Available-for-sale financial assets have been classified partly as Financial instruments at FVTPL and partly as Equity instruments at FVOCI in 2018, depending on the characteristics of the instrument.

A reconciliation of the financial instruments in Hydro is presented below:

Amounts in NOK million	Derivatives at FVTPL[1]	Derivatives identified as hedging instruments	Debt instruments at amortized cost	Financial instruments at FVTPL[2]	Equity instruments at FVOCI[1]	Financial liabilities at amortized cost	Non-financial assets and liabilities[3]	Total
2018								
Assets - current								
Cash and cash equivalents	-	-	5,995	-	-	-	-	5,995
Short-term investments	-	-	119	856	-	-	-	975
Trade and other receivables	-	-	17,860	-	-	-	2,884	20,743
Other current financial assets	605	-	-	-	-	-	196	801
Assets - non-current								
Investments accounted for using the equity method	-	-	11	-	-	-	11,559	11,570
Other non-current assets	333	3	867	535	1,405	-	2,576	5,720
Liabilities - current								
Bank loans and other interest-bearing short-term debt	-	-	-	-	-	8,543	-	8,543
Trade and other payables	-	-	-	-	-	12,830	7,551	20,381
Other current financial liabilities	445	66	-	-	-	5	-	515
Liabilities - non-current								
Long-term debt	-	-	-	-	-	7,080	-	7,080
Other non-current financial liabilities	2,429	-	-	-	-	-	-	2,429

1) FVTPL is financial instruments at fair value through profit or loss. FVOCI is financial instruments at fair value through other comprehensive income.
2) Financial Instruments at Fair Value Through Profit or Loss (FVTPL) are instruments required by IFRS 9 to be at FVTPL.
3) Includes items that are excluded from the scope of IFRS 7, such as investments accounted for using the equity method, except loans to such entities.

Amounts in NOK million	Financial instruments at fair value through profit or loss[1]	Derivatives identified as hedging instruments	Loans and receivables	Available-for-sale financial assets[2]	Other financial liabilities[3]	Non-financial assets and liabilities[4]	Total
2017							
Assets - current							
Cash and cash equivalents	-	-	11,828	-	-	-	11,828
Short-term investments	1,053	-	257	-	-	-	1,311
Trade and other receivables	-	-	17,031	-	-	2,953	19,983
Other current financial assets	602	-	-	-	-	196	798
Assets - non-current							
Investments accounted for using the equity method	-	-	1	-	-	11,220	11,221
Other non-current assets	268	-	960	1,505	-	1,678	4,410
Liabilities - current							
Bank loans and other interest-bearing short-term debt	-	-	-	-	8,245	-	8,245
Trade and other payables	-	-	-	-	12,318	7,254	19,571
Other current financial liabilities	645	8	-	-	2	-	655
Liabilities - non-current							
Long-term debt	-	-	-	-	9,012	-	9,012
Other non-current financial liabilities	2,004	37	-	-	-	-	2,041

1) Financial Instruments at Fair Value Through Profit or Loss (FVTPL) are trading instruments required by ISA 39 to be at FVTPL.
2) Includes the investment in the independent pension trust Norsk Hydros Pensjonskasse, carried at cost.
3) Items disclosed under this category are financial liabilities at amortized cost.
4) Includes items that are excluded from the scope of IFRS 7, such as investments accounted for using the equity method, except loans to such entities.

Financial assets, classified as current and non-current, represent the maximum exposure Hydro has towards credit risk as at the reporting date.

Collateral or margin calls are required for some financial liabilities, primarily related to derivative transactions. Such collaterals for financial instruments are reported as part of Short-term investments.

Impairment of receivables are disclosed in note 26 Trade and other receivables. No other financial assets are currently impaired based on credit losses.

Gains and losses
Realized and unrealized gains and losses from financial instruments and contracts accounted for as financial instruments are included in several line items in the income statement. Below is a reconciliation of the effects from Hydro's financial instruments in the income statements:

Amounts in NOK million	Derivatives at FVTPL	Derivatives identified as hedging instruments	Debt instruments at amortized cost	Financial instruments at FVTPL	Equity instruments at FVOCI	Financial liabilities at amortized cost	Non-financial assets and liabilities	Total[1)]
2018								
Income statement line item								
Revenue	(983)	-	-	-	-	-	-	(983)
Raw material and energy expense	(135)	163	-	-	-	-	-	28
Financial income	-	-	-	(3)	-	-	-	(3)
Financial expense	574	-	-	-	-	-	-	574
Gain/loss in Other comprehensive income								
Recognized in Other comprehensive income (before tax)					(394)			
Removed from Other components of equity and recognized in the income statement					-			

1) Amounts indicates the total gains and losses to financial instruments for each specific income statement line.

Amounts in NOK million	Financial instruments at fair value through profit or loss	Derivatives identified as hedging instruments	Loans and receivables	Available-for-sale financial assets	Other financial liabilities	Non-financial assets and liabilities	Total[1)]
2017							
Income statement line item							
Revenue	541	-	-	-	-	-	541
Raw material and energy expense	281	85	-	-	-	-	366
Financial income	(44)	-	-	(115)	-	-	(158)
Financial expense	811	-	-	-	-	-	811
Gain/loss in Other comprehensive income							
Recognized in Other comprehensive income (before tax)				266			
Removed from Other components of equity and recognized in the income statement				-			

1) Amounts indicates the total gains and losses to financial instruments for each specific income statement line.

Currency effects, with the exception of currency derivatives, are not included above. Negative amounts indicate a gain.

Sensitivity analysis

In accordance with IFRS, Hydro has chosen to provide information about market risk and potential exposure to hypothetical loss from its use of derivative financial instruments and other financial instruments and derivative commodity instruments through sensitivity analysis disclosures. The sensitivity analysis depicted in the tables below reflects the hypothetical gain/loss in fair values that would occur assuming a 10 percent increase in rates or prices and no changes in the portfolio of instruments as of December 31, 2018 and December 31, 2017. Effects shown below are largely also representative of reductions in rates or prices by 10 percent but with the opposite sign convention. Only effects that would ultimately be accounted for in the income statement, or equity, as a result of a change in rates or prices, are included. All changes are before tax.

		Gain (loss) from 10 percent increase in						
		Foreign currency exchange rates			Commodity prices			
Amounts in NOK million	Fair value as of December 31, 2018[1)]	USD	EUR	Other	Aluminium	Other	Interest-rates	Other
Derivative financial instruments[2)]	(2,149)	-	(2,542)	-	-	-	33	-
Other financial instruments[3)]	(2,399)	(537)	303	(191)	-	-	-	24
Derivative commodity instruments[4)]	214	5	18	-	(298)	81	(3)	(1)
Financial instruments at FVOCI[5)]	1,343	256	(6)	1	-	19	(123)	137

		Gain (loss) from 10 percent increase in						
		Foreign currency exchange rates			Commodity prices			
Amounts in NOK million	Fair value as of December 31, 2017[1)]	USD	EUR	Other	Aluminium	Other	Interest-rates	Other
Derivative financial instruments[2)]	(1,574)	(1)	(2,018)	(3)	-	-	21	-
Other financial instruments[3)]	2,088	(160)	128	(214)	-	-	2	31
Derivative commodity instruments[4)]	(205)	(56)	23	11	(130)	(41)	(14)	(3)
Financial instruments at FVOCI[5)]	924	282	(5)	-	-	33	(122)	95

1) The change in fair value due to price changes is calculated based on pricing formulas for certain derivatives, the Black-Scholes/Turnbull-Wakeman models for options and the net present value of cash flows for certain financial instruments or derivatives. Discount rates vary as appropriate for the individual instruments.

2) Includes forward currency contracts and embedded currency derivatives.

3) Includes cash and cash equivalents, investments in securities, bank loans and other interest-bearing short-term debt and long-term debt. Trade payables and trade receivables are also included.

4) Includes all contracts with commodities as underlying, both financial and physical contracts, such as LME contracts and NASDAQ Nordic Power contracts, which are accounted for at fair value.

5) Includes hedging derivatives.

The above sensitivity analysis reflects sensitivities for the instruments held at the balance sheet dates only. Related offsetting physical positions, contracts, and anticipated transactions are not reflected. The calculations do not take into consideration any adjustments for potential correlations between the risk exposure categories, such as the effect of a change in a foreign exchange rate on a commodity price.

The above discussion about Hydro's risk management policies and the estimated amounts included in the sensitivity analysis relates to the balance sheet position as of December 31. Outcomes at other dates could differ materially based on actual developments in the global markets and Hydro's positions. The methods used by Hydro to analyze risks discussed above should not be considered as projections of future events, gains or losses.

The following is an overview of fair value measurements categorized on the basis of observability of significant measurement inputs. Certain items are valued on the basis of quoted prices in active markets for identical assets or liabilities (level 1 inputs), others are valued on the basis of inputs that are derived from observable prices (level 2 inputs), while certain positions are valued on the basis of judgmental assumptions that are to a limited degree or not at all based on observable market data (level 3 inputs). The level in this fair value hierarchy within which measurements are categorized is determined on the basis of the lowest level input that is significant to the fair value measurement.

Amounts in NOK million	**2018**	**Level 1**	**Level 2**	**Level 3**	2017	Level 1	Level 2	Level 3
Assets								
Commodity derivatives	**921**	**376**	**275**	**270**	845	451	199	195
Currency derivatives	**17**	**2**	**14**	**-**	25	25	-	-
Cash flow hedges	**3**	**-**	**-**	**3**	-	-	-	-
Financial assets at FVTPL	**1,391**	**253**	**603**	**535**	1,053	331	722	-
Financial assets at FVOCI	**1,405**	**-**	**-**	**1,405**	969	-	-	969
Total	**3,738**	**631**	**892**	**2,213**	2,893	808	921	1,164
Liabilities								
Commodity derivatives	**(708)**	**(146)**	**(236)**	**(325)**	(1,049)	(419)	(157)	(473)
Currency derivatives	**(2,165)**	**(4)**	**(2,161)**	**-**	(1,600)	(34)	(1,566)	-
Cash flow hedges	**(66)**	**-**	**-**	**(66)**	(45)	-	-	(45)
Total	**(2,939)**	**(150)**	**(2,397)**	**(391)**	(2,694)	(453)	(1,723)	(519)

The following is an overview in which changes in level 3 measurements are specified:

	Commodity derivatives		Currency derivatives				
Amounts in NOK million	Assets	Liabilities	Liabilities	Cash flow hedges	Financial instruments at FVTPL	Equity instruments at FVOCI[1)]	Other
December 31, 2016	26	(47)	-	(280)	-	1,132	10
Total gains (losses)							
in Income statement	174	(473)	-	-	-	-	-
in Other comprehensive income	-	-	-	149	-	(266)	-
Purchases	-	-	-	-	-	7	-
Reclassified to level 2	-	-	-	-	-	-	(5)
Settlements	(1)	51	-	86	-	-	(5)
Currency translation difference	(4)	(3)	-	-	-	98	-
December 31, 2017	195	(473)	-	(45)	-	969	-
Total gains (losses)							
in Income statement	(119)	177	-	-	-	-	-
in Other comprehensive income	-	-	-	(141)	-	395	-
Purchases	195	(39)	-	-	-	-	-
Reclassified at transition to IFRS 9	-	-	-	-	535	-	-
Settlements	-	16	-	124	-	-	-
Currency translation difference	-	(5)	-	-	-	40	-
December 31, 2018	270	(325)	-	(63)	535	1,405	-
Total gains (losses) for the period	(119)	177	-	(141)	-	395	-
Total gains (losses) for the period included in the income statement for assets held at the end of the reporting period	(119)	177	-	-	-	-	-

1) Instruments classified as FVOCI in 2018 correspond to the category Available for sale financial assets in 2017.

Gains or losses relating to level 3 commodity derivatives appearing in the table above are included in the income statement in Raw material and energy expense. Changes in fair value for embedded derivatives are reported as gains or losses for the period. Changes in fair value for hedge instruments are reported in Other comprehensive income. Dividends received for equity instruments at fair value through other comprehensive income are included in Financial income.

Sensitivities relating to commodity derivatives are based on models utilized in the calculation of position balance as of December 31, adjusted for alternate assumptions. Effects shown below are largely also representative of increases in rates or prices by 10 percent but with the opposite sign convention. The following is an overview of such sensitivity:

	Gain (loss) from 10 percent decrease in				
Amounts in NOK million	USD	EUR	Aluminium	Other commodity	Interest rates
Commodity derivatives	17	(14)	52	-	3
Cash flow hedges	-	6	-	(19)	-
Equity instruments at FVOCI	(314)	-	-	-	141

Note 14 - Derivative instruments and hedge accounting

Derivative instruments, whether physically or financially settled, are accounted for under IFRS 9. All derivative instruments are accounted for at fair value with changes in the fair value recognized in the income statement, unless specific hedge criteria are met. Some of Hydro's commodity contracts are deemed to be derivatives under IFRS. For further explanation on the principles for which physical commodity contracts that are accounted for as derivatives, and which are considered own use, see note 2 Significant accounting policies.

Embedded derivatives
Some contracts contain pricing links that affect cash flows in a manner different than the underlying commodity or financial instrument in the contract. For accounting purposes, these embedded derivatives are in some circumstances separated from the host contract and recognized at fair value. Hydro has separated and recognized at fair value embedded derivatives related to currency, aluminium, inflation and coal links from the underlying contracts.

Commodity derivatives
The following types of commodity derivatives were recorded at fair value on the balance sheet as of December 31, 2018 and December 31, 2017. Contracts that are designated as hedging instruments in cash flow hedges are not included. The presentation of fair values for electricity and aluminium contracts shown in the table below includes the fair value of traditional derivative instruments such as futures, forwards and swaps, in conjunction with the physical contracts accounted for at fair value, as well as embedded derivatives.

Amounts in NOK million	**2018**	2017
Assets		
Electricity contracts	**520**	175
Aluminium futures, forwards and options	**437**	719
Other	**95**	164
Netting	**(130)**	(213)
Total	**921**	845
Liabilities		
Electricity contracts	**(293)**	(162)
Coal forwards	**(302)**	(397)
Aluminium futures, forwards and options	**(243)**	(704)
Netting	**130**	213
Total	**(708)**	(1,049)

Embedded derivatives are classified based on the underlying in the contract feature constituting a separable embedded derivative in the table above. Where there are more than one embedded derivative in the same host contract, those embedded derivatives are offset in settlement and thus presented net on the balance sheet.

Changes in the fair value of commodity derivatives are included in operating revenues or cost of goods sold based on classification of host contract for embedded derivatives and on the purpose of the instrument for freestanding derivatives.

Cash flow hedges
Hydro has to a limited extent used cash flow hedge accounting for its risk management positions. Gains and losses on the hedge derivatives are recognized in Other comprehensive income, and accumulated in the hedging reserve in equity and reclassified into operating revenues or cost when the corresponding forecasted sale or consumption is recognized. In 2012 Hydro entered into a hedge arrangement for parts of the power consumption in the Rheinwerk smelter in Germany. The price differential between the German and the Nordic power market was secured through derivative contracts for 150 MW for the period 2013 to 2020.

No ineffectiveness was recognized in the income statement in 2018 or 2017.

The table below gives aggregated numbers related to the cash flow hedges for the period 2017 to 2018.

Amounts in NOK million	2019	**2018**	2017
Expected to be reclassified to the income statement during the year (NOK million)	(65)	**(8)**	(73)
Reclassified to the income statement from Other components of equity (NOK million)[1]		**(124)**	(79)

1) Deviates from expected reclassifications due to change in market prices throughout the year. Negative amounts indicate a loss.

Liabilities of NOK 62 million and NOK 45 million were recognized as the fair value of cash flow hedging instruments for December 31, 2018 and 2017, respectively.

Hydro performs trading operations to reduce currency exposures on commodity positions. The effect of such operations is recognized as a part of Financial expense in the income statement.

For the after tax movement in Hydro's equity relating to cash-flow hedges for 2018 and 2017, please see note 38 Shareholders' equity.

Fair Value of Derivative Instruments
The fair value of derivative financial instruments such as currency forwards and swaps are based on quoted market prices. The fair market value of aluminium and electricity futures/forwards and option contracts is based on quoted market prices obtained from the London Metals Exchange and NASDAQ Nordic Power/EEX (European Energy Exchange) respectively. The fair value of other commodity over-the-counter contracts and swaps is based on quoted market prices, estimates obtained from brokers and other appropriate valuation techniques. Where long-term physical delivery commodity contracts are recognized at fair value in accordance with IFRS 9, such fair market values are based on quoted forward prices in the market, and assumptions of forward prices and margins where market prices are not available. Hydro takes credit-spread into consideration when valuating positions when necessary.

For further information on fair values, see note 4 Measurement of fair value. See note 13 Financial instruments for a specification of the classification of derivative positions according to a fair value hierarchy.

Note 15 - Revenues from contracts with customers

Hydro implemented IFRS 15 Revenue from Contracts with Customers as of January 1, 2018. The standard is implemented retrospectively with the cumulative effect of initially applying IFRS 15 recognized directly to equity at implementation. The amounts presented for the year 2017 are thus not fully comparable, however, the differences are limited.

The significant judgment in applying IFRS 15 for Hydro is related to which contracts that qualify for recognition over time, versus recognition at a point in time; at delivery to customer.

Hydro's main performance obligations can be described as follows:

- sale of products, produced independent of customer orders
- sale of products, produced to customer order
- sale of products made to customer specifications and order
- sale of electricity

For products which are not made to the customer's specification, performance obligations are either the individual product, the delivery in total, or an agreed volume of products delivered in more than one delivery. Contracts covering a fixed, committed volume at fixed or determinable prices are relevant for this assessment. Delivery period for such contracts can cover a period of a few weeks, and up to one year. Some contracts cover more than one year, however, these are a declining number. Prices are usually a combination of fixed elements and market references such as the aluminium price at the London Metal Exchange or other market references, at, or prior to, delivery. Revenue related to products that are not made to the customers' specification is recognized at delivery of products to customers, which is the same time as under the previous standard used for 2017 amounts. Such contracts accounts for the majority of sales in the segments Bauxite & Alumina, Primary Metal, Metal Markets and Rolled Products, and a significant share of sales in Extruded Solutions. Some of these contracts includes an element of freight services, which is considered a separate performance obligation under IFRS 15, and related revenue is recognized over the time of journey. Payment terms for such products vary between customer segments and regions. The predominant terms vary between 30 to 120 days, and up to a 150 days.

For products made to customer specifications and orders, we have assessed whether the finished product has an alternative use to Hydro, and whether Hydro at all times has an enforceable right to payment for performance completed to date. For contracts where both of these conditions are fulfilled, revenue shall be recognized over the time from start of production of the specialized product until completion of delivery to the customer. For Hydro's products, the alternative use of customer designed products would, in most cases, be as basis for producing other products rather than for sale of the product unchanged. We have assessed whether Hydro has an enforceable right to payment for performance completed to date, including a reasonable margin, throughout the production period. The assessment is primarily related to the segment Extruded Solutions. The main assessment is related to which compensation Hydro would be entitled to in a situation where firm orders are canceled or amended by the customer. Our conclusion is that for close to all contracts we do not have enforceable right to payment as described in IFRS 15, and revenue is thus recognized at a point in time. However, as our conclusions depends both on legal assessment of a large number of contracts in many countries, and on the understanding of what constitutes an enforceable right to payment under IFRS 15, we might reach a different conclusion in the future for some contracts, or for new contracts covering similar products and customer segments entered into in the future. Also for these contracts, prices are fixed at the time of delivery. Payment terms for such products vary between customer segments and regions. The predominant terms vary between 30 to 60 days.

Hydro’s warranty terms vary by product and business segment. Generally, Hydro provides warranty that product complies with specification, and offer repair, replacement or refund of consideration paid for breaches. Such warranties are limited in time, for most products not exceeding 12 months. Individual contracts may include more extensive warranty clauses where Hydro takes responsibility also for some consequential damages, mainly related to more complex products such as certain automotive parts. Warranty liability is to some degree influenced by legal requirements, which may extend the time period for Hydro’s liability.

Sale of electricity, primarily from the Energy segment, continues to be recognized as electricity is delivered to customers through the relevant grid. Sale of energy from other segments represent excess energy purchased under contracts exceeding the operational needs, and relate to periodic maintenance stops or curtailment. During 2018, the majority of power sale from other segments than Energy is related to the 50 percent curtailment in Primary Metal’s Albras plant, amounting to NOK 1,429 million for 2018 and NOK 254 million for 2017. Revenue from sale of energy includes the revenue from sale of concession power, a legal requirement to deliver a certain part of volume produced in Norway to local authorities at a reduced price. Revenue from concession power amounted to NOK 78 million and NOK 75 million in 2018 and 2017, respectively.

Realized and unrealized changes in fair value of commodity derivatives are also presented as part of revenue. These amounts are measured at fair value as required by IFRS 9 Financial Instruments. The instruments are mainly aluminium and power contracts used for risk management purposes, and are included in Other revenue in the table below.

Hydro’s revenue divided by segment and geographic location of the customer is shown in note 7 Operating and geographic segment information. Revenue divided by product type for the main product groups sold are as follows:

Amounts in NOK million	**2018**	2017
Extruded solutions	**61,367**	13,927
Rolled products	**26,538**	25,447
Standard ingots	**8,997**	11,820
Extrusion ingots	**22,030**	22,463
Other casthouse products	**17,804**	16,752
Alumina	**11,322**	12,788
Power	**5,021**	2,731
Other goods and services[1)]	**5,333**	3,774
Total revenue from contracts with customers	**158,411**	109,702
Other revenue	**965**	(482)
Total revenue	**159,377**	109,220

1) Includes sale of bauxite and revenue from allocated freight

Sales commitments

Hydro has entered into sales contracts with customers, mainly for alumina and finished products, either as firm commitments or as committed frame agreements where the customer decides if, and for which volume, a future sale is made. The majority of these contractual commitments are for sale of products at price terms linked to market prices at, or close to, future delivery. The commitments amount to NOK 73 billion, calculated using market prices as of the end of the year. About NOK 21 billion of this amount is expected to be delivered in 2019.

Note 16 - Other income

Amounts in NOK million	2018	2017
Gain on sale of property, plant and equipment	**37**	30
Net gain (loss) on sale of subsidiaries, associates and joint ventures[1)]	**(6)**	2,177
Revenue from utilities[2)]	**58**	89
Rental revenue	**45**	42
Government grants[3)]	**380**	498
Other[4)]	**259**	110
Other income, net	**772**	2,947

1) Amount in 2017 is related mainly to the net remeasurement gain on the previously owned shares in Sapa.
2) Revenue from utilities includes quay structures, pipe network, tank terminal, process water and grid rental.
3) Government grants includes export grants in Brazil, CO2 compensation and investment grants related to Hydro's pilot facility on Karmøy
4) Other includes royalties and insurance compensations.

Note 17 - Raw material and energy expense

Amounts in NOK million	2018	2017
Raw material expense and production related cost	**105,118**	70,050
Change in inventories own production	**(2,596)**	(202)
Raw material and energy expense	**102,523**	69,848

Raw material expense and production related cost include effect of commodity derivative instruments. See note 14 Derivative instruments and hedge accounting.

Note 18 - Employee remuneration

Employee share purchase plan
Hydro has established a share purchase plan for employees in Norway. The plan payout is based on whether the share price (adjusted for dividend paid) increases with at least 12 percent or not during the performance period. Employees are eligible to receive an offer to purchase shares under this plan if they were 1) employed by Norsk Hydro ASA or a more than 90 percent owned Norwegian subsidiary, and 2) employed as of December 31 through the final acceptance date of the share purchase offer. Employees are invited to purchase shares with a rebate of 50 percent for a value of NOK 12,500 or NOK 25,000, depending on shareholder return. The share purchase is financed through a non-interest bearing loan from the company with a repayment period of 12 months.

Compensation expense related to the 2017 performance measurement period was accrued and recognized over the service period of December 31, 2017 through March 31, 2018, the final acceptance date of the offer. In 2018 and 2017 the participation rates of eligible employees in the employee share purchase plan were 88 and 92 percent, respectively. Details related to the employee share purchase plan are provided in the table below.

Employee share purchase plan

Performance measurement period	2018	2017	2016
Total shareholder return performance target achieved	**<12%**	≥12%	≥12%
Employee rebate offered, NOK	**6,250**	12,500	12,500

Share purchase plan compensation	2018	2017
Award share price, NOK	**51.54**	48.40
Number of shares issued, per employee	**443**	511
Total number of shares issued to employees	**1,543,412**	1,729,735
Compensation expense related to the award, NOK thousand	**36,023**	41,496

Employee benefit expense

The average number of employees in Hydro for 2018 and 2017 was 35,731 and 18,422, respectively. As of year end 2018 and 2017, Hydro employed 36,236 and 34,625 people, respectively. Employees in joint operations are not included. The specification of employee benefit expenses, including employee benefits in joint operations, is given in the table below.

Employee benefit expense

Amounts in NOK million	2018	2017
Salary	**18,090**	10,434
Social security costs	**2,910**	1,660
Other benefits	**1,023**	400
Pension expense (note 37)	**1,153**	791
Total	**23,176**	13,285

Note 19 - Depreciation and amortization expense

Specification of depreciation and amortization by asset category

Amounts in NOK million	2018	2017
Buildings	**1,158**	930
Machinery and equipment	**5,705**	5,004
Intangible assets	**506**	222
Depreciation and amortization expense	**7,369**	6,156

Note 20 - Impairment of non-current assets

All Cash Generating Units (CGUs) or fixed assets that are not part of a CGU are reviewed for impairment indicators at each balance sheet date with the exception of goodwill and assets from recent acquisitions where the allocation of fair values is provisionally determined as of the balance sheet date. Tests for impairment have been performed for the CGUs where impairment indicators have been identified. The recoverable amount for these units have been determined estimating the Value in Use (VIU) of the asset and/or, if appropriate, its fair value less cost of disposal (FV), and comparing the highest of the two against the carrying value of the CGUs. The calculation of VIU has been based on management's best estimate, reflecting Hydro's business planning process. The discount rates are derived as the weighted average cost of capital (WACC) for a similar business in the same business environment. For Hydro's businesses the pre-tax nominal discount rate is estimated at between 6.0 and 17.5 percent (2017: 8.75-16.0 percent). The higher rates are applicable for assets within the Bauxite & Alumina and Primary Metal activities in Brazil, while the lower rates are applicable for assets within Extruded Solutions and Rolled Products in Europe. Impairment losses have been recognized where the recoverable amount is less than the carrying value.

Goodwill and intangible assets with indefinite life are required to be tested for impairment annually, in addition to any tests required when impairment indicators are determined to be present. Hydro has elected to do the annual impairment test of goodwill in the fourth quarter. The carrying amount is not recoverable if it exceeds the higher of the asset's or cash generating unit's fair value less costs to sell or the value in use. An impairment loss is recognized in the amount that the carrying value exceeds its recoverable amount. Losses are reversed in the event of a subsequent increase in the recoverable amount of an impaired asset, however, impairment of goodwill is not reversed.

There were no impairment losses recognized in 2018, and an impairment loss of NOK 5 million recognized in 2017.

Goodwill is allocated to CGUs or groups of CGUs as shown in the following table:

Amounts in NOK million	**2018**	2017
Extrusion North America (Extruded Solutions)	**2,442**	-
Extrusion Europe (Extruded Solutions)	**778**	-
Building Systems (Extrusion Solutions)	**504**	-
Precision Tubing (Extrusion Solutions)	**145**	-
Extruded Solutions	**-**	4,309
Bauxite & Alumina Operations	**2,312**	2,572
Remelters sector (Metal Markets)	**404**	388
Total goodwill	**6,584**	7,269

Annual mandatory impairment tests

Extruded Solutions

Goodwill in Extruded Solutions is allocated to four groups of CGUs reflecting the way the business is managed to serve the relevant markets. The groups of CGUs are as follows:

Extrusion North America covers production plants, marketing and product development in the US and Canada. The operation consists of 23 extrusion plants, recognized intangible assets and goodwill from Hydro's acquisition.

Extrusion Europe covers production plants, marketing and product development in Europe, mainly within the EU. The operation consists of 40 production plants, recognized intangible assets and goodwill from Hydro's acquisition.

Building Systems covers production plants, product warehouses, marketing and product development facilities, mainly in Europe, and sales and marketing offices covering a wider presence. The operation is present at 45 locations in 29 countries. The asset base consists of a limited number of production plants, several warehouses of differing size and complexity, three brands, other intangible assets and goodwill from Hydro's acquisition.

Precision Tubing covers production plants, marketing and product development on four continents. The operation consists of 19 production plants in South America, Asia, Europe and North America, recognized intangible assets and goodwill from Hydro's acquisition.

The impairment tests for all of the groups of CGUs described above are cash flow models expressed in nominal terms using forecasts for the first year based on internal business plans approved by management. Results and investment levels are kept at a reasonably stable level from that period, which is considered representative. For a newly acquired business showing negative cash flow, expected increased business volumes are included, reflecting moderate positive cash flows in the future. Margins, volumes and investments are considered highly correlated, as high margin above the metal value is achieved through production of more complex products, requiring higher cost and/or more expensive equipment. We have thus not considered development in margins, cost and volume separately. Cash flows have been projected as terminal values beyond the five-year forecast period. Key assumptions are development in annual net cash flows, comprising volume and cost development in relevant market segments, as well as the discount rate.

The main assumptions and sensitivities are shown in the tables below. Sensitivities are expressed as the changes in the parameter which would result in a recoverable amount equal to the carrying amount of the CGU. For the discount rate, the increased rate is applied for the entire period. For changes in annual nominal net cash flows, the reduced cash flow is applied to each year after the first year, 2019.

Amounts in NOK million	Extrusion North America	Extrusion Europe	Building Systems	Precision Tubing
Carrying value of goodwill	2,441	778	504	145
Carrying value of other assets	5,087	7,758	2,604	3,010
Carrying value of CGU	7,525	8,536	3,108	3,155
Recoverable amount	10,914	16,663	9,482	3,602
Recoverable amount in excess of carrying value	3,389	8,127	6,374	447
Key assumptions:				
Discount rate	9.0%	6.0%	6.0%	8.5%
Sensitivities:				
Discount rate - % change	42%	92%	192%	12%
Discount rate - % point	12.75%	11.5%	17.5%	9.5%
Annual reduction in net cash flow per year after year 2019	(17.0%)	(29.0%)	(48.0%)	(7.0%)

Bauxite & Alumina

Goodwill in Bauxite & Alumina is allocated to a CGU consisting of the Alunorte alumina refinery, the main bauxite source Paragominas and certain related activities. Following regional flooding in the Barcarena region after a period of extreme rainfall in February 2018, authorities ordered several measures against Alunorte, including that the Alunorte alumina refinery is restricted to 50 percent of its capacity while authorities review the situation, over concerns that flooding led to harmful spills. The newly installed press filters were not allowed to be used. Alunorte was, at the beginning of October 2018, also prevented from using the old drum filter technology to prepare bauxite residue for deposit as the associated bauxite residue area (DRS1) was deemed unstable. At that time, Alunorte was allowed to restart commissioning of the new press filters. Residue prepared for deposit using press filter technology, which results in significantly dryer residue, has been deemed safe to deposit on DRS1. Alunorte is, however, not allowed to use the newly developed bauxite deposit area DRS2, as not all required operating licenses are in place.

Alunorte has eight press filters, which were designed to process 100 percent of Alunorte's bauxite residue. Alunorte was, prior to the embargo imposed in March 2018, in the process of commissioning the press filters and scaling down the use of drum filters. The press filters did not achieve their designed performance during this period. An additional filter is currently being installed and is expected to be in operation during the second half of 2019. The timing of a return to full production capacity at Alunorte when the embargo is lifted depends on whether, and how quickly the press filters can reach required capacity.

The recoverable amount has been determined based on a VIU calculation. The time of lifting the production embargo allowing only 50 percent of normal production is highly uncertain. The impairment test assumes two scenarios; one with the embargo lifted in the middle of 2019, and one with the embargo lifted at the end of 2019. For both scenarios, a return to full capacity is assumed to be reached over a period of two to three years, reflecting the uncertain capacity of the press filters. During the curtailment period, alumina prices at the world market have been significantly higher than in the period immediately preceding the embargo. The higher prices are assumed to be related to the production shortfall, and related undersupply of alumina in the world market. To which extent prices will remain high during 2019 and later should restart not be achieved within reasonable time, is highly uncertain. Further, how much prices will be reduced, and for how long lower prices may be expected, once the Alunorte refinery is allowed to increase its production towards normal production levels, is also highly uncertain. The prices are likely to be impacted by unrelated events in addition to the allowed production level at Alunorte. Further, other market prices and regulatory conditions, including the Brazilian indirect tax regime, are uncertain.

Recoverable amount determined as a VIU caluculation amounts to about NOK 42 billion. The value significantly exceeds the carrying value of NOK 23 billion. The calculation used cash flow forecasts in BRL based on internal plans approved by management covering a five-year period. All significant price assumptions are internally derived based on external references. Cash flows have been projected for the following 35 years based on the five-year detailed forecast period using Hydro's long-term assumptions for alumina prices and key raw material prices. The CGU is expected to remain in operation for at least the 40-year period. Improvements expected from certain planned equipment replacements are included. Further improvements are not included in the cash flow forecasts. Cash flows beyond the five-year period are inflated by the expected long-term inflation levels in Brazil and the main western economies.

The main assumptions to which the test is sensitive are shown in the table below:

	Assumptions	
	2019	Long-term
Exchange rate BRL/USD	3.95	4.10
Alumina price real terms 2018 (USD/mt)	457	355
Production volume alumina (million mt)	3.6	6.3
Discount rate nominal, pre-tax	17.5%	17.5%

Significant cash flows are denominated in US dollars. These are translated to BRL at a rate of 3.95 for 2019 with an increase to a nominal rate of 4.10 in 2025, equal to a real exchange rate of 3.52. For future periods the exchange rate is projected with a rate development reflecting the inflation difference of 2.5 percentage points between international inflation and the higher expected Brazil specific inflation.

If one of the key parameters were changed with no changes to the other assumptions, the estimated recoverable amount for the CGU would equal the carrying amount with the following long-term real 2018 assumptions over the entire 40-year period:

	% change	Value
Exchange rate BRL/USD	(21%)	2.80
Alumina price (USD/mt)	(13%)	311
Discount rate (% point)	51%	26.5%

For Metal Markets the impairment test on goodwill has been based on approved business plan for the next year, managements best estimate of cash flows for the following four years and extrapolated to a 15 years cash flow estimate, providing a VIU exceeding the carrying value.

Hydro also has indefinite life intangible assets of NOK 138 million related to the Vigeland power plant in Norway. This CGU is tested for impairment using a FV approach based on observed transaction values for power production assets in the Nordic region. The recoverable amount, estimated as a post-tax fair value, exceeds the carrying amount significantly.

Impairment tests based on indications of loss in value
The CGU in Bauxite & Alumina was also tested for impairment as of the end of the second quarter and at the end of the third quarter following the embargo at Alunorte, which was deemed an impairment indicator at those times. The tests at the end of both interim periods, concluded that the CGU was not impaired.

The Albras smelter, also located in Barcarena, Brazil, was tested for impairment twice during 2018; at the end of the first quarter when the decision to curtail 50 percent of the production due to lack of alumina following from the embargo at Alunorte, and again at the end of the third quarter when it became evident that the curtailment period would be longer than initially assumed. At both times, we concluded that the plant was not impaired.

At the end of 2018 we identified an impairment indicator for the Slovakian primary aluminium plant Slovalco. The recoverable amount was determined as VIU based on Hydro's internal assumptions for aluminium prices, raw material prices including energy, currency exchange rates and timing of cash flows. Contract prices are used for raw materials and energy for periods covered by specific contracts with external suppliers. For periods where such consumption is not yet contracted, or where internal supply of such items as alumina is expected, estimated market prices are used. VIU for Slovalco, which had a carrying value of PPE of about NOK 1.1 billion, exceeded carrying amount by about 33 percent. No impairment write-down was thus recognized.

In 2017 we identified an impairment indicator for the primary aluminium plant at Husnes, Norway. The recoverable amount was determined as the VIU. Hydro has decided to upgrade and restart the closed line, which was assumed in the test. The recoverable amount exceeded the carrying amount of about NOK 0.4 billion significantly.

In addition certain assets were written down as impaired due to physical damage or obsolescence in 2017.

See note 5 Critical accounting judgment and key sources of estimation uncertainty for additional information about impairment testing. Impairment assessment for investments in associates, joint ventures and other financial assets are discussed in the specific notes.

Note 21 - Research and development

Total expensed research and development cost was NOK 594 million in 2018 and NOK 500 million in 2017. Research and development activities are aiming at making production of aluminium more efficient including further improving the operational and environmental performance of Hydro's electrolysis technology. A significant proportion of the research and development means are also used for further developing the production processes and products within casting and alloy technology as well as extruded solutions, rolled products and alumina.

To the extent development costs are directly contributing to the construction of a fixed asset, the development costs are capitalized as part of the asset provided all criteria for capitalizing the cost are met. Costs incurred during the preliminary project stage, as well as maintenance costs, are expensed as incurred. The capitalized development costs were NOK 21 million in 2018 and NOK 24 million in 2017.

Note 22 - Operating leases

Future minimum lease payments due under non-cancellable operating leases are as follows:

Amounts in NOK million	Less than 1 year	1-5 years	Thereafter	Total
Operating lease obligation 2018	693	1,546	645	2,884
Operating lease obligation 2017	771	1,283	284	2,338

Operating lease expense for office space, machinery and equipment amounts to NOK 657 million for 2018 and NOK 311 million for 2017.

Note 23 - Finance income and expense

Amounts in NOK million	**2018**	2017
Interest income (amortized cost)	**250**	322
Dividends received and net gain (loss) on securities	**6**	159
Finance income	**255**	481
Interest expense (amortized cost)	**(699)**	(378)
Capitalized interest	**1**	76
Net foreign exchange gain (loss)	**(1,303)**	(875)
Accretion	**(260)**	(368)
Other	**(53)**	(51)
Finance expense	**(2,315)**	(1,596)
Finance income (expense), net	**(2,060)**	(1,114)

Accretion represent the period's interest component for pension obligations, asset retirement obligations and other liabilities measured as present value of future expected payments.

Note 24 - Income taxes

Amounts in NOK million	2018	2017
Income before tax		
Norway	**4,327**	6,954
Other countries	**2,135**	4,121
Total	**6,462**	11,075
Current taxes		
Norway	**1,770**	1,715
Other countries	**954**	860
Current income tax expense	**2,724**	2,575
Deferred taxes		
Norway	**272**	(315)
Other countries	**(857)**	(369)
Deferred tax expense (benefit)	**(585)**	(685)
Total income tax expense (benefit)	**2,139**	1,891

Components of deferred taxes

Amounts in NOK million	2018	2017
Origination and reversal of temporary differences	**(409)**	(311)
Change in deferred tax asset from tax loss carryforwards	**115**	269
Effect of tax rate changes	**(11)**	(171)
Net change in unrecognized deferred tax assets	**(492)**	(207)
Tax (expense) benefit allocated to Other comprehensive income	**211**	(265)
Deferred tax expense (benefit)	**(585)**	(685)

Reconciliation of tax expense to Norwegian nominal statutory tax rate

Amounts in NOK million	2018	2017
Expected income taxes at statutory tax rate[1)]	**1,486**	2,658
Hydro-electric power surtax[2)]	**943**	708
Equity accounted investments	**(170)**	(372)
Foreign tax rate differences	**(417)**	(142)
Favorable decisions in tax disputes[3)]	**-**	(108)
Tax free income	**(44)**	(601)
Deferred tax asset not recognized and expired tax loss carryforwards	**2**	(144)
Withholding tax and capital taxes	**108**	43
Other tax benefits and deductions with no tax benefits, net[4), 5)]	**231**	(151)
Income tax expense (benefit)	**2,139**	1,891

1) Norwegian nominal statutory tax rate is 23 percent. It is changed to 22 percent from 2019.

2) A surtax of 35.7 percent is applied to taxable income, with certain adjustments, for Norwegian hydro-electric power plants. The surtax comes in addition to the normal corporate taxation. The surtax rate is changed to 37 percent from 2019.

3) The Norwegian Tax Appeal Board ruled in favor of Hydro in tax disputes in 2017. This was related to losses incurred in 2009-2011 on refinancing of subsidiaries that were denied deduction for tax purposes.

4) A substantial part of the provision related to the Alunorte agreements with the Government of Parà and Ministèrio Pùblico Federal made on September 5, 2018 (the TAC and TC agreements), is considered not deductible for tax purposes. The tax effect is included in the line Other tax benefits and deductions with no tax benefits, net.

5) A US tax reform was enacted in 2017 and resulted in significant changes to existing tax law in several areas, including a reduction in federal corporate tax rate from 35 percent in 2017 to 21 percent in 2018. The reduced tax rate resulted in a decrease in the deferred tax liability and hence a positive effect on the income tax expense in 2017. The effect is included in the line Other tax benefits and deductions with no tax benefits, net.

Tax effects of temporary differences and tax loss carryforwards giving rise to deferred tax assets and liabilities

Amounts in NOK million	**Assets 2018**	**Liabilities 2018**	Assets 2017	Liabilities 2017
Inventory valuation	**442**	**(639)**	375	(558)
Accrued expenses	**1,549**	**(311)**	1,477	(278)
Property, plant and equipment	**10,076**	**(16,042)**	10,097	(15,936)
Intangible assets	**1,549**	**(2,314)**	1,538	(2,368)
Pensions	**2,761**	**(1,088)**	2,747	(1,274)
Derivatives	**639**	**(209)**	536	(145)
Other	**517**	**(980)**	162	(724)
Tax loss carryforwards	**5,230**		5,187	
Subtotal	**22,763**	**(21,583)**	22,120	(21,282)
Of which not recognized as tax asset	**(2,553)**		(2,743)	
Gross deferred tax assets (liabilities)	**20,210**	**(21,583)**	19,377	(21,282)
Net deferred tax assets (liabilities)		**(1,373)**		(1,905)

Reconciliation to balance sheets	**2018**	2017
Deferred tax assets	**1,664**	1,617
Deferred tax liabilities	**3,037**	3,522
Net deferred tax assets (liabilities)	**(1,373)**	(1,905)

Recognition of net deferred tax asset is based on expected taxable income in the future.

At the end of 2018, Hydro had tax loss carryforwards of NOK 16,936 million, mainly in Brazil, Spain, Australia, Italy and Belgium. Of the total, NOK 15,101 million is without expiration. The majority of the tax loss carryforwards with an expiry date expire after 2023. Tax assets are recognized for about 54 percent of the tax losses.

Note 25 - Short-term investments

Amounts in NOK million	**2018**	2017
Equity securities	**253**	315
Debt securities	**603**	738
Other	**119**	257
Total short-term investments	**975**	1,311

Note 26 - Trade and other receivables

Amounts in NOK million	**2018**	2017
Trade receivables	**17,144**	16,591
VAT and other sales taxes	**1,578**	2,008
Other receivables	**2,170**	1,438
Allowance for credit losses	**(149)**	(54)
Trade and other receivables	**20,743**	19,983

Of total trade receivables at year end 2018, about ten percent were past due, with the majority within 30 days. Extruded Solutions has a higher share of overdue receivables than the average of the other business areas.

Note 27 - Inventories

Amounts in NOK million	**2018**	2017
Spare parts and raw materials	**6,086**	5,990
Work in progress	**5,710**	5,060
Alumina	**2,977**	1,189
Aluminium casthouse products	**7,394**	4,393
Fabricated products	**4,316**	4,080
Inventories	**26,483**	20,711

Raw materials includes purchased raw materials such as bauxite, caustic soda, oil, coal and other input factors used in the production; however, excluding alumina and aluminium intended for use in Hydro's production of other products. All amounts are net of any write-downs.

Note 28 - Other non-current assets

Amounts in NOK million	**2018**	2017
Securities at fair value through other comprehensive income	**1,405**	969
Securities at fair value through profit or loss	**536**	537
Employee loans	**107**	100
Derivative instruments	**336**	268
Income taxes, VAT and other sales taxes	**2,576**	1,678
Other receivables	**759**	857
Other non-current assets	**5,720**	4,410

Note 29 - Property, plant and equipment

Amounts in NOK million	Land and buildings	Machinery and equipment	Plant under construction	Total
Cost				
December 31, 2016	25,572	83,592	6,844	116,009
Additions	523	2,602	4,212	7,338
Acquisitions through business combinations	3,936	9,102	1,014	14,052
Disposals	(222)	(1,881)	(57)	(2,162)
Transfers[1)]	4,036	3,531	(7,567)	-
Foreign currency translation effect	(77)	(462)	(82)	(621)
December 31, 2017	33,769	96,484	4,363	134,616
Effect of change in accounting principle	(17)	(70)		(87)
Additions	(11)	2,422	4,614	7,025
Acquisitions through business combinations	1,167	(208)	-	959
Disposals	(126)	(1,813)	(56)	(1,995)
Transfers	683	3,229	(3,912)	-
Foreign currency translation effect	(827)	(2,355)	(125)	(3,307)
December 31, 2018	34,638	97,689	4,885	137,212
Accumulated depreciation and impairment				
December 31, 2016	(11,103)	(45,873)	(298)	(57,275)
Depreciation for the year	(930)	(5,004)	-	(5,934)
Impairment losses	(2)	(3)	-	(5)
Disposals	128	1,696	-	1,824
Transfers[1)]	(719)	719	-	-
Foreign currency translation effect	(3)	(221)	18	(206)
December 31, 2017	(12,629)	(48,686)	(280)	(61,596)
Depreciation for the year	(1,158)	(5,705)	-	(6,862)
Disposals	104	1,612	-	1,716
Transfers	(31)	31	-	-
Foreign currency translation effect	209	592	28	830
December 31, 2018	(13,505)	(52,155)	(252)	(65,912)
Carrying value				
December 31, 2017	21,122	47,728	4,083	72,933
December 31, 2018	21,133	45,533	4,633	71,299

1) Transfers includes reclassification of certain industrial structures following renewed assessment.

The table above includes assets held under finance lease arrangements by a total of NOK 621 million, which are mainly included in Machinery and equipment.

Note 30 - Intangible assets

Amounts in NOK million	Intangible assets under development	Mineral and waterfall rights	Software	Technology	Acquired sourcing contracts	Other intangibles assets	Total
Cost							
December 31, 2016	289	1,019	1,041	352	1,220	649	4,570
Additions	65	-	84	-	-	17	167
Acquisitions through business combinations	2	-	250	1,441	-	1,204	2,897
Disposals	-	-	(88)	-	-	(30)	(118)
Transfers	(95)	-	94	-	-	-	-
Foreign currency translation effect	1	(54)	38	63	(75)	87	60
December 31, 2017	263	965	1,420	1,856	1,146	1,927	7,576
Additions	158	-	36	2	-	57	252
Acquisitions through business combinations	-	-	(4)	(19)	-	(95)	(118)
Disposals	-	-	(6)	-	-	(19)	(25)
Transfers	(274)	-	44	237	-	(6)	-
Foreign currency translation effect	2	(84)	(17)	9	(116)	30	(175)
December 31, 2018	148	881	1,472	2,084	1,030	1,895	7,510
Accumulated amortization and impairment							
December 31, 2016	-	-	(815)	(141)	(491)	(448)	(1,895)
Amortization for the year[1)]	-	-	(132)	(52)	(73)	(38)	(295)
Disposals	-	-	87	-	-	5	93
Foreign currency translation effect	-	-	(30)	(6)	33	(32)	(35)
December 31, 2017	-	-	(890)	(199)	(531)	(514)	(2,133)
Amortization for the year[1)]	-	-	(208)	(186)	(63)	(112)	(569)
Disposals	-	-	2	(3)	-	6	5
Foreign currency translation effect	-	-	7	(6)	54	(10)	45
December 31, 2018	-	-	(1,089)	(394)	(540)	(629)	(2,652)
Carrying value							
December 31, 2017	263	965	530	1,657	615	1,413	5,443
December 31, 2018	148	881	383	1,691	490	1,265	4,858

1) Amortization of a sourcing contract is reported as Raw material and energy expense in the income statement.

Mineral rights are not depreciated until extraction of the resources starts. Acquired waterfall rights have indefinite life and are thus not depreciated.

Note 31 - Goodwill

Amounts in NOK million	Extruded Solutions	Bauxite & Alumina	Metal Markets	Total
Cost				
December 31, 2016	-	2,740	396	3,135
Acquisitions through business combinations	4,119	-	-	4,119
Foreign currency translation effect	190	(168)	(8)	14
December 31, 2017	4,309	2,572	388	7,269
Adjusted goodwill from business combination	(539)	-	-	(539)
Foreign currency translation effect	99	(261)	16	(145)
December 31, 2018	3,869	2,312	404	6,584

See note 20 Impairment of non-current assets for information about the annual impairment testing of goodwill.

See note 6 Significant subsidiaries and changes to the consolidated group for information about acquired goodwill.

Note 32 - Investments in joint arrangements and associates

Hydro is engaged in various arrangements on a joint basis with other companies. In assessing whether joint control exists for these arrangements we evaluate the legal framework and contracts governing the arrangement combined with an assessment of which decisions that significantly influence the return from the arrangement. Arrangements owned on a 50/50 basis and/or governed by unanimous decisions constitute the majority of our joint arrangements.

Most of our joint arrangements are joint production facilities supplying metal and other products for Hydro's value chain. Hydro assesses whether joint arrangements are joint operations where Hydro has a direct interest in the assets and direct liability to settle obligations, directly or indirectly, or a joint venture where we have an interest in the net assets of the joint arrangement. In this assessment we evaluate the contracts governing the arrangement and the legal framework for the type of entity in which the arrangement is operated. Hydro is engaged in both joint arrangements that are considered joint ventures, and arrangements that are concluded to be joint operations.

Joint operations
Of our joint operations, two are classified as joint operations based on the legal form of the operations. These are Tomago, an aluminium smelter in Australia, and Skafså ANS, a power producer in Norway. Another two arrangements are classified as joint operations based on the contractual arrangements whereby all output is sold to the shareholders in proportion to their ownership interest at a cost based price formula. The major or sole sources of cash inflows for the joint arrangements are the owners, who are legally obliged to cover production costs. These are Aluminium Norf GmbH (Alunorf), a large rolling mill in Germany, and Aluminium & Chemie Rotterdam B.V., Aluchemie, an anode producer in the Netherlands.

Joint ventures
The following joint ventures are considered material for Hydro:

Qatar Aluminium Ltd. (Qatalum) is a primary aluminium smelter with a dedicated power plant located in Qatar. Qatalum has an annual production capacity of about 600,000 mt of liquid metal. Qatalum is owned by Hydro and Qatar Aluminium Manufacturing Company Q.P.S.C. (50 percent each). During 2018, Qatar Petroleum, which previously held 50 percent of the shares in Qatalum, transferred its shares to the newly established Qatar Aluminium Manufacturing Company, which was listed on the Qatar Stock Exchange, but which Qatar Petroleum retains a controlling interest in. Qatalum was at the outset granted a ten-year income tax holiday, expiring in 2020. A tax reform came into effect from 2010, which introduced a generally applicable corporate income tax rate of 10 percent. A tax rate of 35 percent applies to entities with oil and gas operations or where the activities are carried out under an agreement with the government or entities owned by the government, unless such agreement specifies another tax rate. According to the Qatalum joint venture agreement, the generally applicable tax rate will apply after 2020. It is Hydro's position that the generally applicable income tax rate, currently at 10 percent, shall apply to Qatalum after the expiry of the tax holiday.

Hydro is committed to sell fixed quantities of alumina and purchase all products from Qatalum at market prices. Purchases of metal from Qatalum amounted to NOK 11,980 million in 2018 and NOK 11,363 million in 2017. Related payables amounted to NOK 1,052 million in 2018 and NOK 1,051 million at the end of 2017. Sales from Hydro to Qatalum amounted to NOK 2,761

million in 2018 and NOK 2,222 million in 2017, primarily alumina. Related receivables amounted to NOK 3 million and NOK 128 million at the end of the periods. Qatalum is part of Primary Metal.

Sapa AS, a world leader in aluminium solutions delivering products within extrusions, building systems and precision tubing, was established in September 2013 as a joint venture between Hydro and Orkla ASA, a listed company in Norway. On October 2, 2017, Hydro acquired the additional 50 percent owned by Orkla ASA. Following completion of the transaction, Hydro owns 100 percent of the parent company Sapa AS, which has been renamed Hydro Extruded Solutions AS. All activities in the former Sapa group have been included in Hydro as business area Extruded Solutions. For further information about the transaction, please see note 6 Significant subsidiaries and changes to the consolidated group.

Hydro issued certain guarantees towards Sapa as part of establishing the company, primarily related to tax exposure. A provision of about NOK 100 million was recognized for these guarantees during the time of joint venture. Hydro sold metal products to Sapa at market prices. Sales from Hydro to Sapa amounted to NOK 3,916 million in the period up until completion of the acquisition, from January 1, 2017 to October 2, 2017.

The table below summarizes key figures for these joint ventures for 2018 and 2017. The figures are on the same basis as used for inclusion in the group financial statements. Fair value adjustments from Hydro's contribution of assets and businesses to the joint ventures are included. Intercompany transactions and balances are included, and internal profit and loss in inventory and fixed assets purchased from group companies are not eliminated in the numbers below. All amounts are for the joint ventures on 100 percent basis. The 2017 income and expense amounts for Sapa are for the joint venture period January 1, 2017 to October 2, 2017. All balance sheet amounts are at the end of the years 2018 and 2017.

	Qatalum		Sapa	
	Year/year ended		Period as JV	
Amounts in NOK million	**2018**	2017	**2018**	2017
Revenue	**12,309**	11,645	**-**	43,616
Depreciation, amortization and impairment	**2,139**	2,301	**-**	974
Earnings before financial items and tax	**1,929**	1,963	**-**	2,240
Financial income (expense), net[1)]	**(484)**	(472)	**-**	(107)
Income tax expense	-	-	**-**	(533)
Net income (loss)	**1,445**	1,491	**-**	1,600
Other comprehensive income	**151**	194	**-**	(168)
Total comprehensive income	**1,596**	1,685	**-**	1,432
Cash and cash equivalents	**2,543**	3,133	**-**	-
Other current assets	**4,625**	4,168	**-**	-
Non-current assets	**30,675**	30,940	**-**	-
Current financial liabilities	**2,094**	1,854	**-**	-
Non-current financial liabilities	**11,537**	12,931	**-**	-
Other liabilities	**1,789**	1,426	**-**	-
Net assets	**22,423**	22,031	**-**	-
Hydro's share of net assets	**11,211**	11,015	**-**	-
Accumulated elimination of internal gain in inventory	**64**	(85)	**-**	-
Carrying value of Hydro's equity investment	**11,276**	10,930	**-**	-
Total investment	**11,276**	10,930	**-**	-

1) Financial income (expense), net includes interest expense for Qatalum with NOK 492 million and NOK 467 million for 2018 and 2017, respectively. Interest expense for Sapa is included with NOK 87 million for the period January 1, 2017 to October 2, 2017.

As part of the acquisition of Sapa, Hydro acquired an ownership interest in Technal Middle East W.L.L, a joint venture owned 50 percent each by Hydro and Bahrain Aluminium Extrusion Company B.S.C

Hydro also holds interests in certain associates accounted for using the equity method. In November 2017, Hydro purchased 26 percent of Corvus Energy Inc., a Canadian company producing battery solutions for ships. The following table provides a summary of changes in carrying value for Hydro's joint ventures and associates.

Amounts in NOK million	Qatalum	Sapa	Other JVs	Associates	Total
December 31, 2016	11,421	8,374	-	12	19,807
Hydro's share of net income (loss)	746	800	13	(4)	1,554
Hydro's share of other comprehensive income	97	(84)			13
Dividends and other payments received by Hydro	(747)	(1,500)			(2,247)
Companies acquired/(sold), net			227	39	266
Amortization				(3)	(3)
Changes elimination of internal gain in inventory	(46)	25			(21)
Derecognized at acquisition of control		(7,615)			(7,615)
Foreign currency translation and other	(541)			8	(533)
December 31, 2017	10,930	-	240	52	11,221
Hydro's share of net income (loss)	723		54	(19)	758
Hydro's share of other comprehensive income	75		(3)		72
Dividends and other payments received by Hydro	(1,173)		(46)		(1,219)
Companies acquired/(sold), net				25	25
Amortization			(2)	(15)	(17)
Loans			10		10
Changes elimination of internal gain in inventory	150				150
Foreign currency translation and other	571			(1)	570
December 31, 2018	11,276	-	252	42	11,570

Note 33 - Trade and other payables

Amounts in NOK million	**2018**	2017
Accounts payable	**16,361**	15,195
Payroll and value added taxes	**2,901**	2,976
Accrued liabilities and other payables	**1,120**	1,400
Trade and other payables	**20,381**	19,571

Note 34 - Short and long-term debt

Amounts in NOK million	**2018**	2017
Bank loans and overdraft facilities	**5,455**	7,595
Other interest-bearing short-term debt	**275**	276
Current portion of long-term debt	**2,813**	373
Bank loans and other interest-bearing short-term debt	**8,543**	8,245

Amounts in NOK million	**2018**	2017
USD	**1,458**	860
SEK	**2,915**	3,007
NOK	**4,497**	4,497
Other	**29**	38
Total unsecured loans	**8,900**	8,402
Finance lease obligations	**993**	983
Outstanding debt	**9,893**	9,385
Less: Current portion	**(2,813)**	(373)
Total long-term debt	**7,080**	9,012

Long-term debt includes six bonds in NOK and SEK, all listed on the Oslo Stock Exchange. Market values of the bonds is close to par value.

Repayments of long-term debt including interest

Amounts in NOK million	Unsecured loans	Other	Interest	Total
2019	2,773	40	293	3,106
2020	1,282	39	196	1,517
2021	870	40	172	1,081
2022	2,972	44	136	3,151
2023	1	45	82	127
Thereafter	1,003	785	368	2,156
Total	8,900	993	1,246	11,139

Reconciliation of liabilities arising from financing activities

Amounts in NOK million	Long-term debt	Bank loans and other interest-bearing short-term debt	Total liabilities from financing activities
December 31, 2016	3,397	3,283	6,679
Cash flows	5,934	935	6,869
Non-cash changes:			
Net change in current balance	(410)	410	-
Business combinations	64	3,556	3,620
Amortizations	9	-	9
Foreign currency effects	18	61	79
December 31, 2017	9,012	8,245	17,257
Cash flows	815	(2,676)	(1,861)
Non-cash changes:			
Net change in current balance	(2,771)	2,771	-
Amortizations	6	-	6
Foreign currency effects	18	204	221
December 31, 2018	7,080	8,543	15,623

Note 35 - Provisions

	2018			2017		
Amounts in NOK million	**Short-term**	**Long-term**	**Total**	Short-term	Long-term	Total
Environmental clean-up and asset retirement obligations (ARO)	**563**	**3,737**	**4,299**	384	4,201	4,585
Employee benefits	**1,151**	**762**	**1,913**	1,048	714	1,762
Indirect taxes	**202**	**393**	**595**	246	200	446
Onerous contracts	**113**	**107**	**220**	118	208	326
Other	**1,253**	**589**	**1,841**	500	505	1,005
Total provisions	**3,281**	**5,588**	**8,868**	2,296	5,828	8,124

The following table includes a specification of changes to provisions for the year ending December 31, 2018 and the expected timing of cash outflows relating to the provisions.

Amounts in NOK million	Environmental clean-up and ARO	Employee benefits	Indirect taxes	Contracts	Other	Total
Specification of change in provisions						
December 31, 2017	4,585	1,762	446	326	1,005	8,124
Business combinations	(18)	3	-	-	8	(7)
Additions	454	1,333	304	58	1,330	3,479
Used during the year	(258)	(1,122)	(143)	(173)	(353)	(2,049)
Reversal of unused provisions	(37)	(77)	-	-	(178)	(292)
Accretion expense and effect of change in discount rate	(220)	8	-	9	1	(202)
Foreign currency translation	(206)	5	(12)	1	28	(184)
December 31, 2018	4,299	1,913	595	220	1,841	8,868
Timing of cash outflows						
2019	563	1,151	202	113	1,253	3,281
2020-2023	1,583	405	300	107	457	2,852
Thereafter	2,154	357	93	-	131	2,735
	4,299	1,913	595	220	1,841	8,868

Provisions for environmental clean-up and asset retirement obligations relate to production facilities currently in operation and facilities that are closed. The obligations relate to such actions as restoration or rehabilitation of industrial or mining sites, disposal of contaminated material and related activities. Hydro has provided for demolition of buildings and installations only where there is a legal or contractual obligation, or a specific decision to demolish, which is the case for few sites. The provision represents the present value of expected outflows at the times of expected payments. There is significant uncertainty both in the timing and amount of these remediation actions, as they are linked to future business decisions as well as decisions and approval by authorities in the jurisdictions we operate. Provisions are based on the current legal framework.

The most significant provisions relate to the following sites and issues. For Bauxite and Alumina's mine in Brazil we have obligations to remediate the tailing areas and mining sites, including reforestation of the area and monitoring and maintenance of the site after initial remediation. For Bauxite and Alumina's alumina refinery in Brazil we have obligations to remediate bauxite residue deposits, including monitoring the contamination levels and other aspects after initial remediation. For Primary Metal's closed Kurri Kurri smelter site in Australia we have obligations to remediate certain contaminated areas at the site as well as securing appropriate deposit of spent pot lining and certain other waste material, which is currently ongoing. The plan for remediation is not yet approved by the authorities. Hydro also has obligations for remediation of contamination on site and in related areas related to historic industrial activities in Germany and Norway, reported in Other and eliminations. The more significant of these sites are the sites in Schwandorf and Hannover in Germany. For many of these provisions, there are no standard remediation methods available and cost is therefore uncertain. The provision also includes remediation of spent pot lining in all active smelters, site clearance for certain leased land as well as certain liabilities related to Norwegian power plant concessions to be reverted to the Norwegian Government.

Provisions for employee benefits relate to expected short-term performance bonus payments and short and long-term provisions for expected bonus payments that are based on the number of years of service, primarily for our European operations. Such bonuses are expected to be paid in periods between 10 to 50 years of service, or upon termination of employment.

Indirect taxes include taxes not related to taxable income, such as value added taxes, duties and property taxes. Provision for indirect taxes includes a charge related to a customs case in Germany and provisions for indirect taxes in Brazil.

Contracts comprise onerous contracts, and include compensation for exit of a rental contract for premises.

Other includes insurance provisions related to insurance contracts issued by Hydro's captive insurance company, Industriforsikring AS, to external parties including associates and joint arrangements, provisions for legal and other disputes, and certain liabilities related to representation and warranty provisions related to sale of businesses.

Sapa Profiles Inc. (SPI), a Portland, Oregon based subsidiary of Hydro Extruded Solutions AS (formerly Sapa AS) is under investigation by the United States Department of Justice (DOJ) Civil and Criminal Divisions regarding certain aluminum extrusions that SPI manufactured from 1996 to 2015, including extrusions that were delivered to a supplier to NASA. In early March 2019, the parties reached an agreement in principle, requiring Hydro to pay an amount of around NOK 400 million. Hydro has provided for this amount and the estimated legal costs as of the end of 2018. There may be adjustments to the amount as the detailed agreement matures, and related costs are determined. As part of the share purchase agreement for Sapa, the parties have agreed that Orkla ASA shall indemnify Hydro for 50 percent of any liability in relation to this case.

Further, Hydro has entered into two agreements with authorities in Pará, Brazil, in relation to the operations of the alumina refinery, Alunorte. The contracts include a technical Term of Adjusted Conduct (TAC) and a social Term of Commitment (TC). The TAC regulates certain technical studies and improvements, audits, fines and payments for food cards to families living in the hydrographic area of the Murucupi River. The TC addresses additional efforts and investments related to the social development of communities in Barcarena. The combined investments, costs and fines are estimated at about BRL 360 million, around NOK 750 million, of which about NOK 65 million relates to fines now paid. About NOK 600 million has been expensed in 2018. The remainder is primarily related to improvement of certain monitoring and water treatment equipment at the plant, expected to be capitalized. In addition, Hydro has committed to provide support to local societies close to the plant. Such measures are expensed as incurred.

Note 36 - Contingent liabilities and contingent assets

Hydro is involved in or threatened with various legal and tax matters arising in the ordinary course of business. See note 5 Critical accounting judgment and key sources of estimation uncertainty for a discussion of how such items are assessed and measured. Where Hydro considers there is a current obligation based on a past event, and payment or remediation actions is probable, a provision is established, see note 35 Provisions. Where Hydro considers an obligation to be possible, i.e. not probable yet not remote, it is disclosed as a contingent liability.

Hydro is involved in a significant number of tax cases related to various types of taxes. Hydro’s widespread business operations expose us to several tax regimes and their interaction. We see that tax authorities challenge transfer prices to an increasing degree. Although Hydro currently has no significant transfer price disputes with tax authorities, our long value chain with a large number of internal transactions and business operations covering multiple tax jurisdictions expose us to such disputes, both related to prior and future transactions. Hydro’s businesses in Brazil have a large portfolio of cases disputed by tax authorities, of which the majority relates to indirect taxes. This includes cases in the administrative and legal dispute systems with various background and risk of loss. In total known cases amount to about NOK 5.1 billion, of which about NOK 3.5 billion is considered possible. About half of those amounts are covered by tax indemnifications from acquisition. The final outcome of these cases is not expected until several years into the future, and is highly uncertain. Additional cases may be raised by tax authorities based on tax declarations for periods not yet assessed, or when interpretation of tax regulations change. Hydro has provided for individual tax cases where the risk of loss is considered above 50 percent. Provisions for indirect taxes are included in provisions disclosed in Note 35 Provisions, while provisions for income tax expenses are included in Taxes payable.

Hydro has environmental liabilities related to several sites and issues. Where remediation is acknowledged as Hydro's responsibility or a legal obligation is deemed to exist, a provision for the best estimate of costs to be incurred is established and disclosed in note 35 Provisions. For many of our industrial sites, in particular sites where operation is expected to continue indefinitely, remediation costs are difficult to assess. The precise need for remediation actions, their timing and cost has not yet been planned, and is thus uncertain. For some sites, the exact level of pollution may also be uncertain as ground and water are not sampled where no indication of contamination is identified. Obligations for historic contamination of sites and surrounding areas in addition to areas provided for may be identified and deemed Hydro's responsibility, whether related to currently owned or used sites, or sites we previously have owned and/or used. The cost of remediation of any additional contamination deemed Hydro's responsibility is uncertain.

Authorities and non-governmental organizations have filed several lawsuits related to the Alunorte incident, claiming a combination of mitigating actions and financial compensation. The argumentation, cost calculation and legal basis for these claims is highly uncertain. Further claims may still be received. Given the limited information about claimed physical and moral damages to be compensated, and the extent and cost of mitigating actions claimed, or the extent or content of other potential claims and lawsuits, it is not possible at this time to provide a range of possible outcomes or a reliable estimate of potential future exposure for Hydro. It is further not possible to estimate the timing of when such claims may be determined or when any payments may arise.

Hydro is also exposed to increased product warranty and product liability responsibilities, both as result of contractual commitments and caused by liability under background law. Product warranty and product liability may impose significant costs depending amongst other things on the application of the product sold.

Hydro is exposed to legal cases based on contractual or other basis, including related to contract delivery or purchase obligations or warranties and representations given in relation to sale of businesses. Where a payment is probable, a provision for the likely amount is recognized.

Note 37 - Employee retirement plans

Hydro provides post-employment benefits covering a substantial portion of employees. Plans and benefit levels vary between companies and countries. In recent years, there has been a shift from traditional final salary defined benefit plans to defined contribution and contribution-oriented plans. Many defined benefit plans have been closed for new entrants, and in some defined benefit plans, large groups of employees have converted to defined contribution arrangements. Still, a number of employees continues to earn benefits under defined benefit plans, but many of these plans are heavily impacted by deferred members and pensioners.

	2018				2017			
Amounts in NOK million	**Norway**	**Germany**	**Other**	**Total**	Norway	Germany	Other	Total
Pension expense								
Defined benefit plans	**133**	**194**	**87**	**414**	132	186	29	347
Defined contribution plans	**175**	**-**	**292**	**467**	153	-	100	253
Multiemployer plans	**55**	**-**	**2**	**57**	48	-	2	50
Termination benefits and other	**63**	**11**	**62**	**136**	44	3	41	87
Social security cost	**53**	**-**	**26**	**78**	49	-	4	53
Pension expense	**478**	**205**	**470**	**1,153**	425	189	177	791
Interest expense (income)	**(20)**	**146**	**12**	**138**	(2)	136	18	152
Remeasurement (gain) loss in other comprehensive income	**1,065**	**(76)**	**(63)**	**925**	(763)	(167)	(56)	(986)

	2018				2017			
Amounts in NOK million	**Norway**	**Germany**	**Other**	**Total**	Norway	Germany	Other	Total
Recognized defined benefit asset and liability								
Defined benefit obligation major plans	**(12,904)**	**(9,240)**	**(5,165)**	**(27,310)**	(12,247)	(9,173)	(5,512)	(26,932)
Plan assets	**12,899**	**-**	**4,950**	**17,849**	13,189	-	5,343	18,532
Reimbursement rights	**310**	**-**	**-**	**310**	303	-	-	303
Liability other plans	**(29)**	**(134)**	**(528)**	**(691)**	(21)	(127)	(532)	(681)
Social security cost	**(598)**	**-**	**(45)**	**(644)**	(552)	-	(40)	(591)
Net defined benefit liability	**(322)**	**(9,375)**	**(789)**	**(10,486)**	673	(9,300)	(741)	(9,368)
Recognized prepaid pension	**4,523**	**45**	**594**	**5,162**	5,143	47	559	5,750
Recognized pension liability	**(4,845)**	**(9,420)**	**(1,383)**	**(15,648)**	(4,471)	(9,348)	(1,300)	(15,118)
Net amount recognized	**(322)**	**(9,375)**	**(789)**	**(10,486)**	673	(9,300)	(741)	(9,368)

Other plans include some minor plans in various entities and countries. These plans may be funded or unfunded. None of these plans are considered material, neither individually nor combined.

	2018				2017			
Amounts in NOK million	**Norway**	**Germany**	**Other**	**Total**	Norway	Germany	Other	Total
Change in defined benefit obligation (DBO)								
Opening Balance	**(12,247)**	**(9,173)**	**(5,512)**	**(26,932)**	(12,495)	(8,327)	(102)	(20,924)
Current service cost	**(128)**	**(194)**	**(29)**	**(351)**	(127)	(186)	(8)	(321)
Past service cost and curtailment gain (loss)	**-**	**-**	**(42)**	**(42)**	-	-	(19)	(19)
Interest expense	**(287)**	**(145)**	**(144)**	**(575)**	(305)	(135)	(42)	(482)
Actuarial gain (loss) demographic assumptions	**-**	**(73)**	**57**	**(17)**	-	-	-	-
Actuarial gain (loss) economic assumptions	**(588)**	**249**	**280**	**(59)**	(164)	103	(165)	(227)
Experience gain (loss)	**(200)**	**(93)**	**13**	**(280)**	(44)	68	16	41
Benefit payments	**590**	**281**	**219**	**1,090**	618	266	56	940
Termination benefits	**(44)**	**-**	**-**	**(44)**	(46)	-	-	(46)
Settlements	**-**	**-**	**36**	**36**	340	-	147	487
Business combinations	**-**	**-**	**-**	**-**	(29)	(220)	(5,184)	(5,433)
Divestments	**-**	**-**	**-**	**-**	4	-	-	4
Foreign currency translation	**-**	**(92)**	**(43)**	**(135)**	-	(741)	(211)	(952)
Closing Balance	**(12,904)**	**(9,240)**	**(5,165)**	**(27,310)**	(12,247)	(9,173)	(5,512)	(26,932)

	2018				2017			
Amounts in NOK million	**Norway**	**Germany**	**Other**	**Total**	Norway	Germany	Other	Total
Change in pension plan assets								
Opening Balance	**13,189**	**-**	**5,343**	**18,532**	12,624	-	102	12,726
Interest income	**313**	**-**	**147**	**460**	312	-	41	353
Return on plan assets above (below) interest income	**(265)**	**-**	**(352)**	**(617)**	971	-	169	1,140
Company contributions	**93**	**-**	**9**	**102**	92	-	3	94
Benefit payments	**(432)**	**-**	**(201)**	**(632)**	(469)	-	(51)	(520)
Settlements	**-**	**-**	**(40)**	**(40)**	(340)	-	(147)	(487)
Business combinations	**-**	**-**	**-**	**-**	-	-	5,015	5,015
Foreign currency translation	**-**	**-**	**43**	**43**	-	-	211	211
Closing Balance	**12,899**	**-**	**4,950**	**17,849**	13,189	-	5,343	18,532

	2018				2017			
Amounts in NOK million	**Norway**	**Germany**	**Other**	**Total**	Norway	Germany	Other	Total
Analysis of the defined benefit obligation (DBO)								
Active members	**(3,487)**	**(4,643)**	**(613)**	**(8,744)**	(3,462)	(4,622)	(631)	(8,716)
Deferred members	**(794)**	**(722)**	**(1,889)**	**(3,405)**	(706)	(731)	(2,181)	(3,618)
Pensioners	**(8,623)**	**(3,874)**	**(2,664)**	**(15,161)**	(8,079)	(3,819)	(2,700)	(14,598)
Defined benefit obligation	**(12,904)**	**(9,240)**	**(5,165)**	**(27,310)**	(12,247)	(9,173)	(5,512)	(26,932)
Weighted average duration (years)	**13.0**	**18.4**			13.1	18.5		

Contributions to funded pension plans, benefit payments from unfunded pension plans, and social security tax imposed on such contributions and payments amounted to a cash outflow of about NOK 1,200 million for 2018 and about NOK 950 million for 2017. Hydro's cash impact is expected to be at the same level in the coming year.

Hydro's main pension plans are offered in Norway and Germany. The plans are described below:

Norway

Hydro has closed the main defined benefit plans for new members, and the majority of employees are now covered by defined contribution plans that are based on salaries up to a maximum level subject to tax deduction. For additional salaries, employees earn retirement benefits in unfunded contribution based plans. The remaining employees are covered by defined benefit plans that offer benefits based on final salary level and the number of years in service, and include benefits for dependents. Contributions to the plans providing benefits based on salaries up to a maximum level are subject to tax

deduction. The plans are funded; all vested benefits are required by law to be funded for such plans. Benefits based on salaries above this level are covered by unfunded plans. The main funded plans are managed by Norsk Hydros Pensjonskasse, a separate, regulated legal entity. Hydro's pension plans complement the public pension schemes in Norway. Plans providing benefits for salary levels above the tax deductible level have been closed for new members from January 1, 2017.

Effective January 1, 2017, Hydro increased contributions to defined contribution plans for most affected employees in Norway.

Hydro participates in a supplementary pension plan that entitles the majority of its Norwegian employees life-long benefits in addition to other pension benefits. The benefits are financed through a pooled arrangement by private sector employers (avtalefestet pensjon, AFP) where also the Norwegian state contributes. The plan is a defined benefit plan with limited funding and where plan assets are not segregated. The information required to calculate the share of the plan and account for the plan as a defined benefit plan is not available from the plan administrator. Hydro therefore accounts for the plan as if it were a defined contribution plan. The annual contributions have increased since inception and are expected to increase further. The employer contributions are included in Multiemployer plans.

Significant actuarial assumptions for the main Norwegian defined benefit plans include:

Assumptions	**Benefit obligation 2018**	**Benefit expense 2018**	Benefit obligation 2017	Benefit expense 2017
Discount rate	**2.50%**	**2.40%**	2.40%	2.50%
Expected salary increase	**2.50%**	**2.25%**	2.25%	2.25%
Expected pension increase	**1.50%**	**1.00%**	1.00%	1.00%
Mortality basis	**K2013**	**K2013**	K2013	K2013

The discount rate is based on the yield on covered bonds (debt securities backed by cash flows from mortgages) issued in Norway. The market for covered bonds has developed in size and liquidity, and we deem this market to be sufficiently deep to serve as reference for the discount rate for our post-employment benefit plans in Norway.

The sensitivities shown in the table below have been calculated for the main Norwegian plans illustrating the effects of changing one assumption while keeping the other assumptions unchanged. Possible correlation between assumptions is not reflected in the calculations.

Sensitivities decrease (increase) benefit obligation year end Amounts in NOK million, except percent	2018	2018
Discount rate increase 0.5% point	6.2%	799
Salary increase 0.5% point	(1.0%)	(132)
Pension increase 0.5% point	(6.2%)	(796)
One year longer life all members	(4.5%)	(580)

The plan assets in the funded plans provided through Norsk Hydros Pensjonskasse were invested as follows at the end of 2018 and 2017:

Amounts in NOK million, except percent	**2018**	**2018**	2017	2017
Cash and cash equivalents	**2.6%**	**329**	3.0%	393
Equity instruments Norway	**20.5%**	**2,589**	21.4%	2,767
Equity instruments other countries	**18.9%**	**2,395**	19.1%	2,463
Debt instruments	**33.4%**	**4,220**	32.1%	4,144
Investment funds	**5.6%**	**705**	6.0%	779
Real estate	**19.0%**	**2,405**	18.4%	2,379
Total	**100.0%**	**12,644**	100.0%	12,927

Real estate consists of office buildings in the Oslo area. A share of the buildings are leased and occupied by Hydro. Investment funds are primarily private equity funds investing in unlisted companies across various industries in Europe, the US and Asia, and infrastructure funds investing in the UK, continental Europe and the US. Equity instruments are held through liquid funds invested in listed companies in Norway and globally. Debt instruments are mainly bond issues with maturities up to 10 years and investment grade rating.

Germany
In Germany, the majority of plan members are covered by defined benefit plans that offer benefits based on final salary level and the number of years in service. The main plans are unfunded. Hydro's main plans are closed for new entrants, and all new employees are now offered benefits under new defined contribution-oriented plans. These plans are unfunded and treated as defined benefit plans for financial reporting purposes.

Significant actuarial assumptions for the main German plans include:

Weighted-average assumptions	**Benefit obligation 2018**	**Benefit expense 2018**	Benefit obligation 2017	Benefit expense 2017
Discount rate	**1.8%**	**1.6%**	1.6%	1.6%
Expected salary increase	**2.4%**	**2.4%**	2.4%	2.4%
Expected pension increase	**1.5%**	**1.5%**	1.5%	1.5%
Mortality basis	**RT 2018 G**	**RT 2005 G**	RT 2005 G	RT 2005 G

The sensitivities shown in the table below have been calculated for the main German plans illustrating the effects of changing one assumption while keeping the other assumptions unchanged. Possible correlation between assumptions is not reflected in the calculations.

Sensitivities decrease (increase) benefit obligation year end Amounts in NOK million, except percent	2018	2018
Discount rate increase 0.5% point	8.4%	778
Salary increase 0.5% point	(2.7%)	(247)
Pension increase 0.5% point	(6.8%)	(625)
One year longer life all members	(4.5%)	(414)

Other
Other includes Hydro's post-employment benefits outside Norway and Germany. Following the acquisition of the Sapa Group, October 2, 2017, Extruded Solutions' post-employment benefit plans outside Norway and Germany are included here. Most employees affected are covered by defined contribution plans. Defined benefit plans relate largely to the UK and the US, where the majority of the benefit obligation is financed and administered through independent pension trusts. Pension expense for 2018 includes a past service cost of NOK 40 million related to a judgment by the High Court of England and Wales requiring all employers who offered guaranteed minimum pensions in the period 1990 to 1997 to perform gender equalization, increasing the estimated liability for such benefits.

Note 38 - Shareholders' equity

Share capital

Number of shares	Ordinary shares issued	Treasury shares	Ordinary shares outstanding
December 31, 2016	2,068,998,276	(26,104,160)	2,042,894,116
Treasury shares issued to employees		1,803,232	1,803,232
December 31, 2017	2,068,998,276	(24,300,928)	2,044,697,348
Treasury shares issued to employees		1,605,449	1,605,449
December 31, 2018	2,068,998,276	(22,695,479)	2,046,302,797

The share capital of Norsk Hydro ASA as of December 31, 2018 and 2017 was NOK 2,271,760,107 consisting of 2,068,998,276 ordinary shares at a par value of NOK 1.098 per share. All shares have equal rights and are freely transferable.

Treasury shares

The treasury shares may, pursuant to the decision of the General Meeting at the time these shares were acquired, be used as consideration in connection with commercial transactions or share schemes for the employees and representatives of the Corporate Assembly and the Board of Directors.

The treasury shares amount per December 31, 2018 of NOK 756 million was comprised of NOK 25 million share capital and NOK 731 million retained earnings.

Change in Other components of equity

The table below specifies the changes in Other components of equity for 2018 and 2017.

Amounts in NOK million	**2018**	2017
Items that will not be reclassified to income statement:		
Remeasurement postemployment benefits		
January 1	**773**	22
Remeasurement postemployment benefits during the year	**(925)**	986
Reclassified to retained earnings on divestment of subsidiaries	**-**	(14)
Deferred tax offset	**208**	(221)
December 31	**55**	773
Remeasurement postemployment benefits equity accounted investments		
January 1	**-**	(11)
Remeasurement postemployment benefits during the year	**-**	(2)
Reclassified to retained earnings on divestment of equity accounted investments	**-**	13
December 31	**-**	-
Unrealized gain (loss) on assets measured at FVTOCI		
January 1	**(239)**	16
Period unrealized loss on available-for-sale securities	**394**	(266)
Tax expense	**-**	11
December 31	**155**	(239)
Items that will be reclassified to income statement:		
Currency translation differences		
January 1	**(1,864)**	(467)
Currency translation differences during the year	**(2,031)**	(1,394)
Reclassified to Net income on liquidation of foreign operation	**-**	8
December 31	**(3,895)**	(1,854)
Effect of change in Accounting Principle		(10)
December 31 restated		(1,864)
Cash flow hedges - See note 14 Derivative instruments and hedge accounting		
January 1	**(35)**	(158)
Period gain recognized in Other comprehensive income	**(141)**	149
Reclassification of hedging gain (loss) to Net income	**124**	79
Tax expense	**3**	(55)
December 31	**(49)**	15
Effect of change in Accounting Principle		(50)
December 31 restated		(35)
Other components of equity in equity accounted investments		
January 1	**33**	769
Period gain (loss) recognized in Other comprehensive income	**72**	15
Reclassified to Net income on divestment of equity accounted investments	**-**	(751)
December 31	**105**	33
Total other components of equity attributable to Hydro shareholders as of December 31	**(1,936)**	20
Total other components of equity attributable to non-controlling interests as of December 31	**(1,692)**	(1,352)

Earnings per share

Basic and diluted earnings per share is computed using Net income attributable to Hydro shareholders and the weighted average number of outstanding shares in each year. There are no significant diluting elements. The weighted average number of outstanding shares used for calculating basic and diluted earnings per share was 2,045,796,971 for 2018 and 2,044,105,404 for 2017.

Hydro's outstanding founder certificates and subscription certificates entitle the holders to participate in any share capital increase, provided that the capital increase is not made in order to allot shares to third parties as compensation for their transfer of assets to Hydro. These certificates represent dilutive elements for the earnings per share computation.

Note 39 - Capital management

Hydro's capital management policy is to maximize value creation over time, while maintaining a strong financial position and an investment grade credit rating. During 2018 net cash provided by operating activities was close to net cash used in investing activities.

Credit rating

To secure access to capital markets at attractive terms and remain financially solid, Hydro aims to maintain an investment grade credit rating from the leading agencies, Standard & Poor's (current rating BBB) and Moody's (current rating Baa2), both with stable outlook. Hydro targets, over the business cycle, a ratio of Funds from operations to Adjusted net cash (debt) of at least 40 percent, and an Adjusted net cash (debt) to Equity ratio below 55 percent.

Liquidity management and funding

Hydro manages its liquidity and funding requirements centrally to cover group operating requirements and long-term capital needs. Hydro operates cash pools in several currencies where all wholly-owned subsidiaries participate, to the extent permitted by country legislation. Such cash pool arrangements facilitate netting of cash positions within the group, thereby reducing the requirement for external financing, and centralizing management of aggregated positions to the parent company. The activities in former Sapa (now Extruded Solutions) have been fully integrated in Hydro’s treasury and cash management setup. At the end of 2018, NOK 3.0 billion of Hydro's cash position of NOK 6.0 billion was outside such group arrangements, mainly in Brazil.

Hydro has an ambition to access national and international capital markets as primary sources for external long-term funding.

Hydro has a syndicated USD 1,700 million revolving credit facility maturing in November 2020. The facility was undrawn per year-end 2018.

Funding of subsidiaries, associates and jointly controlled entities

Normally the parent company, Norsk Hydro ASA, incurs debt and extends loans or equity to wholly-owned subsidiaries to fund capital requirements. Hydro's policy is to finance part-owned subsidiaries and investments in associates and joint arrangements according to its ownership share, on equal terms with the other owners. All financing is executed on an arm's length basis. Project financing is used for certain funding requirements mainly to mitigate risk while also considering partnership and other relevant factors.

Shareholder return

Long-term return to shareholders should reflect the value created by Hydro, and consists of dividends and share price development. Hydro aims to provide its shareholders with a competitive return compared with alternative investments in similar companies. Our ambition is in the long term to pay out, on average, 40 percent of net income as ordinary dividend over the cycle to our shareholders. The dividend policy has a floor of NOK 1.25 per share. Dividends for a particular year are based on expected future earnings and cash flow, future investment opportunities, the outlook for world markets and Hydro's current financial position. Share buybacks or extraordinary dividends may be used to supplement ordinary dividends during periods of strong financial results after considering the status of the business cycle and capital requirements for future growth.

Hydro's capital management measures

Hydro's management uses the Adjusted net cash (debt) to Equity ratio to assess the group's financial solidity and ability to absorb volatility in the markets. Net cash (debt) is defined as Hydro's cash and cash equivalents plus short-term investments, less short- and long-term interest-bearing debt. Adjusted net cash (debt) is adjusted for net cash (debt) positions regarded as unavailable for servicing debt, and includes pension liabilities and other obligations which are considered debt-like in nature. The calculation of Adjusted net cash (debt) will change when IFRS 16 Leases is implemented as of January 1, 2019. The adjustment for operating lease commitments, net of expected income tax benefit, will no longer be relevant, as the recognized lease liability will be included in Net cash (debt).

The ability to generate cash compared to financial liabilities is another important measure of risk exposure and financial solidity. Hydro's management uses Funds from operations and the ratio Funds from operations to Adjusted net cash (debt) as capital management measures. Funds from operations reflects the cash generation from Hydro's wholly and partly owned operating assets before changes in net operating capital, including the contribution from equity accounted investments, and after current tax expense.

Both financial ratio calculations include adjustments for the indebtedness of Hydro's equity accounted investments. Though Hydro has no financial obligations towards the lenders of its equity accounted investments, the adjustments are considered relevant as the debt and cash flow level in these entities affect Hydro's overall cash generation and financial risk profile.

Adjusted net cash (debt), Equity, Funds from operations and the above mentioned financial ratios are presented in the following table.

Adjusted net cash (debt) including net debt equity accounted investments (EAI)

Amounts in NOK million, except ratio	**2018**	2017
Cash and cash equivalents	**5,995**	11,828
Short-term investments	**975**	1,311
Bank loans and other interest-bearing short-term debt	**(8,543)**	(8,245)
Long-term debt	**(7,080)**	(9,012)
Net cash (debt)	**(8,653)**	(4,118)
Cash and cash equivalents and short-term investments in captive insurance company[1)]	**(876)**	(1,076)
Net pension obligation at fair value, net of expected income tax benefit[2)]	**(8,813)**	(7,895)
Operating lease commitments, net of expected income tax benefit[3)]	**(1,708)**	(1,585)
Short- and long-term provisions net of expected income tax benefit, and other liabilites[4)]	**(3,077)**	(3,295)
Adjusted net cash (debt)	**(23,127)**	(17,968)
Net debt in EAI[5)]	**(5,584)**	(5,798)
Adjusted net cash (debt) including EAI	**(28,711)**	(23,767)

Adjusted net cash (debt) including EAI / Equity

Total equity	**(90,769)**	(92,209)
Adjusted net cash (debt) including EAI / Equity	**0.32**	0.26

1) Cash and cash equivalents and short-term investments in Hydro's captive insurance company Industriforsikring AS are assumed to not be available to service or repay future Hydro debt, and are therefore excluded from the measure Adjusted net cash (debt).

2) The expected income tax benefit related to the net pension liability is NOK 1,673 million and NOK 1,474 million, respectively, for 2018 and 2017.

3) Operating lease commitments are discounted using a rate of 2.69 percent and 1.14 percent for 2018 and 2017, respectively. The discount rate used for 2018 includes an estimated Hydro credit spread of 1.05 percent. The expected tax benefit on operating lease commitment is estimated at 30 percent. The adjustment for operating lease commitments, net of expected income tax benefit, will no longer be relevant when IFRS 16 Leases is implemented from January 1, 2019, as the recognized lease liability will be included in Net cash (debt).

4) Consists of Hydro's short and long-term provisions related to asset retirement obligations, net of an expected tax benefit estimated at 30 percent, and other non-current financial liabilities.

5) Net debt in equity accounted investments is defined as the total of Hydro's relative ownership percentage of each equity accounted investment's short and long-term interest-bearing debt less their cash positions, reduced by total outstanding loans from Hydro to the equity accounted investment. Net debt per individual equity accounted investment is limited to a floor of zero. The adjustments are related to Qatalum.

Funds from operations / Adjusted net cash (debt) including EAI

Amounts in NOK million, except ratio	**2018**	2017
Net income (loss)	**4,323**	9,184
Depreciation, amortization and impairment	**7,369**	6,162
Deferred taxes	**(585)**	(685)
Loss (gain) on sale of non-current assets	**188**	(2,046)
Transaction related effects (Sapa)[1]	**-**	707
Net foreign exchange (gain) loss	**1,303**	875
Capitalized interest	**(1)**	(75)
Commodity derivatives	**(415)**	322
Hydro's share of depreciation, amortization and impairment in EAI	**1,070**	1,638
Funds from operations	**13,252**	16,081
Funds from operations / Adjusted net cash (debt) including EAI	**0.46**	0.68

1) Reversal of inventory revaluation in Sapa.

Note 40 - Dividends

Hydro's Board of Directors normally proposes a dividend per share in connection with the fourth quarter results that are published in February each year. The Annual General Meeting considers this proposal, normally in May, and the approved dividend is then paid to the shareholders. Dividends are paid once each calendar year; generally occurring in May. For non-Norwegian shareholders, Norwegian withholding tax will be deducted at source in accordance with the applicable Norwegian tax regulations. For additional information related to Hydro's dividend and shareholder policy see note 39 Capital management.

For fiscal year 2018 the Board of Directors has proposed a dividend of NOK 1.25 per share to be paid in May 2019. The Annual General Meeting, scheduled to be held May 7, 2019, will consider this dividend proposal. If approved, this would be a total dividend of approximately NOK 2,558 million. In accordance with IFRS, the fiscal year 2018 proposed dividend is not recognized as a liability in the 2018 financial statements.

Dividends declared and paid in 2018 and 2017 for the prior fiscal year, respectively, are as follows:

	Paid in 2018 for fiscal year 2017	Paid in 2017 for fiscal year 2016
Dividend per share paid, NOK	**1.75**	1.25
Total dividends paid, NOK million	**3,581**	2,556
Date proposed	**February 15, 2018**	**February 8, 2017**
Date approved	**May 7, 2018**	**May 3, 2017**
Dividend payment date	**May 18, 2018**	**May 12, 2017**

Dividends to non-controlling shareholders in Hydro's subsidiaries are reported as dividends in Consolidated statements of changes in equity.

Note 41 - Contractual commitments and commitments for future investments

Amounts in NOK million	2019	Investments thereafter	Total
Contract commitments for investments in property, plant and equipment	2,765	169	2,934
Additional authorized future investments in property, plant and equipment	2,618	794	3,412
Contract commitments for other future investments	13	-	13
Total	5,396	963	6,359

Additional authorized future investments include projects formally approved for development by the Board of Directors or management. General investment budgets are excluded from these amounts.

Hydro has long-term contractual commitments for the purchase of aluminium, raw materials, electricity, and transportation in addition to long-term sales commitments. The future non-cancellable fixed and determinable obligations under these commitments as of December 31, 2018 are shown in the table below:

Amounts in NOK million	Bauxite, alumina and aluminium	Energy related	Other
2019	15,346	12,653	5,125
2020	5,449	13,000	2,716
2021	4,617	10,905	1,522
2022	4,745	6,449	1,056
2023	4,625	6,726	715
Thereafter	15,814	47,471	8,412
Total	50,597	97,204	19,547

Amounts relating to contracts which are entirely or partly linked to market prices such as LME are based on the spot price at the balance sheet date.

Long-term sales commitments mainly relate to alumina, aluminium and electricity. The amounts include commitments for the delivery of electricity from power stations that will revert to the Norwegian Government. The volume from these power stations is 547 GWh in 2019 and 11.6 TWh in total. Commitments relating to concession power from stations that are not subject to reversion have an annual volume of 258 GWh.

Hydro also has contractual commitments for the sales and purchase of products from part-owned entities, see note 32 Investments in joint arrangement and associates. These commitments are excluded from the table above. Furthermore, Hydro has additional long-term purchase and sales commitments which include variable elements that are not included in the table above.

Note 42 - Cash flow information

Cash disbursements and receipts included in cash from operations

Amounts in NOK million	**2018**	2017
Income taxes paid	**3,231**	2,180
Interest paid	**653**	362
Interest received	**250**	322
Dividends received from available-for-sale investments	**-**	112

In 2018 and 2017, non-cash investing activities for asset retirement costs amounted to NOK 59 million and NOK 118 million, respectively.

Note 43 - Auditor's remuneration

KPMG is the Group auditor of Norsk Hydro ASA. EY was the appointed group auditor for Sapa prior to the transaction on October 2, 2017, and continued as auditor for the former Sapa units now constituting business area Extruded Solutions. The business area Extruded Solutions has changed auditor to KPMG during 2018. The following table shows fees to the appointed auditors for 2018 and 2017. For 2017, the table includes fees to KPMG for the period January 1 to December 31, and fees to EY for the period October 2 to December 31. For all categories the reported fee is the recognized expense for the year.

Amounts in NOK million	Audit [1]	Audit related [2]	Other services[3]	Tax related	Total
2018					
Norway	14	-	11	-	25
Outside Norway	36	-	-	3	39
Sum	51	1	11	3	66
2017					
Norway	15	1	6	-	23
Outside Norway	24	1	2	-	27
Total	39	2	8	-	50

1) Audit fees of NOK 51 million (2017: NOK 39 million) consist of fees to KPMG of NOK 36 million (2017: NOK 28 million), and fees to EY of NOK 15 million (2017: NOK 11 million).

2) Audit related fees of NOK 2 million in 2017 was fees to KPMG.

3) Other services mainly include KPMG's review of viability performance and EY services related to tax and immigration services for expatriated employees. Fees for other services of NOK 11 million consist of fees to KPMG of NOK 3 million, and fees to EY of NOK 9 million.

Financial statements Norsk Hydro ASA

Income statements

Amounts in NOK million	Notes	2018	2017
Revenue		**232**	317
Gain (loss) on sale of subsidiaries, net	7	**(3)**	41
Total operating income		**229**	357
Employee benefit expense	2, 3	**603**	535
Depreciation and impairment	4	**21**	18
Other		**251**	278
Total operating expenses		**875**	831
Operating loss		**(647)**	(474)
Financial income, net	5	**1,938**	(17)
Income before tax		**1,292**	(491)
Income taxes	6	**(276)**	307
Net income		**1,015**	(183)
Appropriation of net income and equity transfers			
Dividend proposed		**2,558**	3,578
Retained earnings		**(1,543)**	(3,762)
Total appropriation		**1,015**	(183)

Balance sheets

Amounts in NOK million, December 31	Notes	**2018**	2017
Assets			
Property, plant and equipment and intangible assets	4	**226**	214
Shares in subsidiaries	7	**57,052**	57,052
Receivables from subsidiaries	8, 10	**13,908**	11,598
Prepaid pension, investments and other non-current assets	2, 9	**4,733**	4,943
Total financial non-current assets		**75,692**	73,592
Receivables from subsidiaries		**9,465**	10,142
Prepaid expenses and other current assets	10	**62**	40
Cash and cash equivalents		**2,984**	7,889
Total current assets		**12,512**	18,072
Total assets		**88,430**	91,878
Equity and liabilities			
Paid-in capital			
Share capital	13	**2,272**	2,272
Treasury shares	13	**(25)**	(27)
Paid-in premium	13	**28,987**	28,987
Other paid-in capital	13	**139**	110
Retained earnings			
Retained earnings	13	**28,622**	30,521
Treasury shares	13	**(731)**	(783)
Equity	13	**59,265**	61,080
Long-term provisions	2, 9	**3,373**	3,219
Long-term debt	12	**5,232**	8,056
Payables to subsidiaries		**-**	49
Other long-term liabilities		**5,232**	8,105
Bank loans and other interest-bearing short-term debt		**3,043**	3,616
Dividends payable		**2,558**	3,578
Payables to subsidiaries		**14,379**	11,774
Other current liabilities		**580**	506
Total current liabilities		**20,560**	19,473
Total equity and liabilities		**88,430**	91,878

Statements of cash flows

Amounts in NOK million	**2018**	2017
Net income	**1,015**	(183)
Depreciation and impairment	**21**	18
Net foreign exchange (gain) loss	**(453)**	819
Changes in receivables and payables, and other items	**(794)**	3,883
Net cash provided by (used in) operating activities	**(211)**	4,537
Purchases of short-term investments	**-**	(5,094)
Proceeds from sales of short-term investments	**-**	8,402
Net purchases of other investments	**(46)**	(602)
Net cash provided by (used in) investing activities	**(46)**	2,706
Dividends paid	**(3,581)**	(2,556)
Proceeds from shares issued	**44**	37
Other financing activities, net	**(1,103)**	(2,405)
Net cash used in financing activities	**(4,640)**	(4,924)
Foreign currency effects on cash	**(8)**	128
Net increase (decrease) in cash and cash equivalents	**(4,905)**	2,447
Cash and cash equivalents at beginning of year	**7,889**	5,442
Cash and cash equivalents at end of year	**2,984**	7,889

Notes to the financial statements Norsk Hydro ASA

Note 1 - Summary of significant accounting policies

The financial statements of Norsk Hydro ASA are prepared in accordance with the Norwegian accounting act and accounting principles generally accepted in Norway (N GAAP). Financial statement preparation requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses as well as disclosures of contingencies. Actual results may differ from estimates. Interest rates used for calculating net present values are rounded to the nearest 10 basis points for post employment benefits, to the nearest 25 basis points for other non-financial assets and liabilities. As a result of rounding adjustments, the figures in one or more columns included in the financial statements may not add up to the total of that column.

Shares in subsidiaries, associates and jointly controlled entities
Shares in subsidiaries, associates and jointly controlled entities are presented according to the cost method. Group relief received is included in dividends from subsidiaries. Dividend from subsidiaries is recognized in the year for which it is proposed by the subsidiary to the extent Norsk Hydro ASA can control the decision of the subsidiary through its share holdings. Shares in subsidiaries, associates and jointly controlled entities are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may exceed the fair value of the investment. An impairment loss is reversed if the impairment situation is deemed to no longer exist.

Employee retirement plans
Norsk Hydro ASA has adopted the alternative treatment allowed in NRS 6 whereby employee retirement plans are measured as required by IAS 19, see note 2 Significant accounting policies to the consolidated financial statements for additional information.

Foreign currency
The functional currency of the company is the Norwegian krone, NOK. Realized and unrealized currency gains or losses on transactions denominated in other currencies than NOK, as well as currency gains or losses on assets and liabilities denominated in a currency other than NOK, are included in Financial income, net. This is in accordance with NRS' preliminary standard on transactions and accounts in foreign currency.

Cash and cash equivalents
Cash and cash equivalents include cash, bank deposits and all other monetary instruments with a maturity of less than three months at the date of purchase.

Short-term investments
Short-term investments include bank deposits and all other monetary instruments with a maturity between three and twelve months at the date of purchase and current listed equity and debt securities held for trading and valued at fair value. The resulting unrealized holding gains and losses are included in Financial income, net. Investment income is recognized when earned.

Property, plant and equipment
Property, plant and equipment is carried at historical cost less accumulated depreciation and impairment losses. According to NRS' preliminary standard regarding impairment of non-current assets such assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. The impairment of long-lived assets is recognized when the recoverable amount determined as the higher of fair value less cost to sell or value in use of the asset or group of assets is less than the carrying value. The amount of the impairment is the difference between the carrying value and the recoverable amount. An impairment loss is reversed if the impairment situation is deemed to no longer exist.

Intangible assets
Intangible assets acquired individually or as a group are recognized at fair value when acquired, in accordance with NRS' preliminary standard on intangible assets. Intangible assets are amortized on a straight-line basis over their useful life and tested for impairment whenever indications of impairment are present.

Norsk Hydro ASA accounts for CO_2 emission allowances at cost as an intangible asset. The emission rights are not amortized, impairment testing is done on an annual basis. Sale of CO_2 emission rights is recognized at the time of sale at the transaction price.

Leased assets
Leases are assessed under NRS 14 Leasing. Lease arrangements that transfer the majority of risks and control to Hydro are considered financial lease, and recognized as asset and liability. Payments under other leases and rental arrangements are expensed over the lease term.

Derivative instruments
Forward currency contracts and currency options are recognized in the financial statements and measured at fair value at each balance sheet date with the resulting unrealized gain or loss recorded in Financial income, net.

Provisions
Provisions are recognized when Norsk Hydro ASA has a present obligation (legal or constructive) as a result of a past event, it is probable (more likely than not) that Norsk Hydro ASA will be required to settle the obligation, and a reliable estimate can be made of the amount, taking into account the risks and uncertainties. The provision is measured at the present value of the cash flows estimated to settle the obligation. Uncertain outcomes are measured as the expected value of reasonably possible outcomes.

Contingencies and guarantees
Norsk Hydro ASA recognizes a liability for the fair value of obligations it has undertaken in issuing guarantees. Contingencies are recognized in the financial statements when probable of occurrence and reliably estimable.

Share-based compensation
Norsk Hydro ASA accounts for share-based payment in accordance with NRS 15A Share-Based Payment. NRS 15A requires share-based payments to be accounted for as required by IFRS 2 Share-based Payment. See note 2 Significant accounting policies to the consolidated financial statements for additional information.

Risk management
For information about risk management in Norsk Hydro ASA see note 12 Financial and commercial risk management to the consolidated financial statements.

Income taxes
Deferred income tax expense is calculated using the liability method in accordance with NRS' preliminary standard on Income Taxes. Under the liability method, deferred tax assets and liabilities are measured based on the differences between the carrying values of assets and liabilities for financial reporting and their tax basis which are considered temporary in nature. Deferred income tax related to remeasurements of pension obligations are recognized directly in equity. The tax effect of equity transactions, such as group contribution given, is recognized as a part of the equity transaction and do not affect the income tax expense. Other changes in deferred income tax asset and liability balances during the year represent the deferred income tax expense. Changes resulting from amendments and revisions in tax laws and tax rates are recognized when the new tax laws or rates are enacted.

Note 2 - Employee retirement plans

Norsk Hydro ASA has closed the main defined benefit plans for new members, and the majority of employees are now covered by a defined contribution plan that is based on salaries up to a maximum level subject to tax deduction. For additional salaries, employees earn retirement benefits in an unfunded contribution based plan. The remaining employees are covered by defined benefit plans that offer benefits based on final salary level and the number of years in service, and include benefits for dependents. The plan providing benefits based on salaries up to a maximum level is funded; all vested benefits are required by law to be funded for such plans. Benefits based on salaries above this level are covered by unfunded plans. The main funded plan is managed by Norsk Hydros Pensjonskasse, a separate, regulated legal entity. Hydro's pension plans supplement the public pension schemes in Norway. The plans comply with legal requirements for pension plans in Norway. Plans providing benefits for salary levels above the tax deductible level have been closed for new members from January 1, 2017.

Norsk Hydro ASA participates in a pension plan that entitles the majority of its employees life-long benefits in addition to other pension benefits. The benefits are financed through a pooled arrangement by private sector employers (avtalefestet pensjon, AFP) where also the Norwegian state contributes. The plan is a defined benefit plan with limited funding and where plan assets are not segregated. The information required to calculate the share of the plan and account for the plan as a defined benefit plan is not available from the plan administrator. Hydro therefore accounts for the plan as if it were a defined contribution plan. The annual contributions have increased since inception and are expected to increase further. The employer contributions are included in Multiemployer plans.

Pension cost

Amounts in NOK million	**2018**	2017
Defined benefit plans	**37**	36
Defined contribution plans	**20**	17
Multiemployer plans	**4**	3
Termination benefits and other	**6**	8
Social security cost	**8**	9
Pension expense	**75**	75
Interest expense (income)	**(43)**	(32)
Remeasurement (gain) loss directly to equity	**445**	(458)

Recognized defined benefit assets and liability

Amounts in NOK million	**2018**	2017
Defined benefit obligation major plans	**(5,306)**	(5,103)
Plan assets	**6,699**	6,832
Reimbursement rights	**310**	303
Liability other plans	**(3)**	(2)
Social security cost	**(330)**	(309)
Net defined benefit asset	**1,371**	1,722
Recognized prepaid pension	**4,046**	4,221
Recognized pension liability	**(2,675)**	(2,499)
Net amount recognized	**1,371**	1,722

Change in defined benefit obligation (DBO)

Amounts in NOK million	**2018**	2017
Opening Balance	**(5,103)**	(5,205)
Current service cost	**(36)**	(35)
Interest expense	**(119)**	(127)
Actuarial gain (loss) economic assumptions	**(231)**	(61)
Experience gain (loss)	**(108)**	(40)
Benefit payments	**296**	307
Terminations benefits	**(6)**	(6)
Settlements	**-**	65
Closing Balance	**(5,306)**	(5,103)

Change in pension plan assets

Amounts in NOK million	**2018**	2017
Opening Balance	**6,832**	6,369
Interest income	**162**	158
Return on plan assets above (below) interest income	**(105)**	563
Contributions to plans	**5**	20
Benefit payments	**(196)**	(211)
Settlements	**-**	(67)
Closing Balance	**6,699**	6,832

Analysis of the defined benefit obligation (DBO)

Amounts in NOK million	**2018**	2017
Active members	**(1,115)**	(1,119)
Deferred members	**(468)**	(426)
Pensioners	**(3,722)**	(3,557)
Defined benefit obligation	**(5,306)**	(5,103)

Assumptions	**Benefit obligation 2018**	**Benefit expense 2018**	Benefit obligation 2017	Benefit expense 2017
Discount rate	**2.50%**	**2.40%**	2.40%	2.50%
Expected salary increase	**2.50%**	**2.25%**	2.25%	2.25%
Expected pension increase	**1.50%**	**1.00%**	1.00%	1.00%
Mortality basis	**K2013**	**K2013**	K2013	K2013

See note 37 Employee retirement plans in notes to the consolidated financial statements for information about sensitivities.

Note 3 - Management remuneration, employee costs and auditor fees

See note 9 Management remuneration in the notes to the consolidated financial statements for information and details related to the Corporate Management Board remuneration. Costs for some corporate management board members employed by subsidiaries are charged to Norsk Hydro ASA for services rendered as members of the Corporate Management Board.

See note 10 Board of Directors and Corporate Assembly in the notes to the consolidated financial statements for information and details related to the Board of Directors' remuneration.

See note 18 Employee remuneration in the notes to the consolidated financial statements for information on the employee share purchase plan.

Partners and employees of Hydro's appointed auditors, KPMG, own no shares in Norsk Hydro ASA or any of its subsidiaries. Audit fees were NOK 8 million in both 2018 and 2017. Audit related fees were NOK 1 million in 2017. Fees for other services were NOK 2 million in 2018 and NOK 1 million in 2017.

The average number of employees in Norsk Hydro ASA was 282 in 2018 as compared to 272 in 2017. As of year end 2018 and 2017, Norsk Hydro ASA employed 286 and 277 employees, respectively.

Total loans given by Norsk Hydro ASA to Norwegian employees as of December 31, 2018 were NOK 97 million. Loans to employees consist of NOK 49 million secured loans (home and car loans) with the remainder unsecured. The unsecured loan balance as of December 31, 2018 related to the employee share purchase plan was NOK 13 million.

Payroll related expenses are presented in the table below.

Amounts in NOK million	**2018**	2017
Employee benefit expense:		
Salaries	**467**	402
Social security costs	**59**	60
Other benefits	**3**	1
Pension expense (note 2)	**73**	75
Internal invoicing of payroll related costs	**-**	(3)
Total	**603**	535

Note 4 - Property, plant and equipment and intangible assets

Operating lease expense amounted to NOK 83 million in 2018 and NOK 72 million in 2017. The company has the following future operating lease commitments under non-cancellable leases: 2019: NOK 72 million, 2020: NOK 72 million, 2021: NOK 72 million, 2022: NOK 12 million.

Amounts in NOK million	Property, plant and equipment	Intangible assets	Total
Cost December 31, 2017	344	65	409
Additions at cost	33	-	33
Disposals at cost	(1)	-	(1)
Accumulated depreciation and impairment December 31, 2018	(185)	(31)	(215)
Carrying value December 31, 2018	191	35	226
Depreciation and impairment in 2018	(9)	(12)	(21)

Intangible assets mainly consist of software.

Note 5 - Finance income and expense

Amounts in NOK million	**2018**	2017
Dividends from subsidiaries	**1,218**	588
Interest from group companies	**475**	362
Other interest income	**47**	73
Interest paid to group companies	**(102)**	(106)
Other interest expense	**(213)**	(151)
Net foreign exchange gain (loss)	**453**	(819)
Other, net	**61**	36
Financial income (expense), net	**1,938**	(17)

Note 6 - Income taxes

The tax effect of temporary differences resulting in deferred tax assets (liabilities) are:

	Temporary differences Tax effect	
Amounts in NOK million	**2018**	2017
Short-term items	**6**	6
Long-term receivables from subsidiaries	**(158)**	-
Pensions[1)]	**(302)**	(396)
Long-term debt	**49**	-
Other long-term items	**11**	25
Tax loss carryforwards	**-**	-
Deferred tax assets (liabilities)	**(394)**	(365)

1) Includes NOK 92 million and NOK (111) million of tax benefit (expense) allocated to equity in 2018 and 2017 respectively.

In accordance with the preliminary accounting standard for tax, taxable temporary differences and deductible temporary differences, which reverse or may reverse in the same period, are netted.

Reconciliation of tax expense

Amounts in NOK million	**2018**	2017
Income (loss) before taxes	**1,292**	(491)
Expected income taxes at statutory tax rate	**297**	(118)
Dividend exclusion	**(30)**	(44)
Effect of tax rate change	**(16)**	(18)
Favorable decisions in tax disputes	**-**	(108)
Permanent differences and other, net	**25**	(20)
Income taxes	**276**	(307)
Components of income taxes		
Current income taxes	**156**	(131)
Change in deferred taxes	**121**	(176)
Income taxes	**276**	(307)

See note 24 Income taxes in the consolidated financial statements for further information.

Taxes payable were NOK 164 million per December 31, 2018 and NOK 63 million per December 31, 2017.

Note 7 - Shares in subsidiaries

The following shares in subsidiaries are directly owned by Norsk Hydro ASA.

Company name	Country	Location	Percentage of shares owned by Norsk Hydro ASA	Book value (NOK million)
Hydro Aluminium AS	Norway	Oslo	100.00	51,293
Hydro Energi AS	Norway	Oslo	100.00	5,643
Hydro Aluminium Deutschland GmbH[1)]	Germany	Grevenbroich	25.04	92
Industriforsikring AS	Norway	Oslo	100.00	20
Hydro Kapitalforvaltning AS	Norway	Oslo	100.00	4
Total				57,052

1) The company is owned 74.96 percent by Hydro Aluminium AS, and 25.04 percent by Norsk Hydro ASA.

Percentage of shares owned equals percentage of voting shares owned. Several of the above-mentioned companies also own shares in other companies.

In addition to the directly owned subsidiaries listed above, Norsk Hydro ASA has the following subsidiaries with significant operational activities. Sales offices, companies mainly serving as holding companies, and dormant companies, as well as companies holding smaller operational activities are not included in the list below. A full list of subsidiaries is available in Hydro's country by country reporting and at www.hydro.com. The companies are listed by the business area in which the majority of their activities are managed.

Company name	Country	Ownership
Bauxite & Alumina		
ALUNORTE - Alumina do Norte do Brasil S.A.	Brazil	92.13%
Mineração Paragominas SA	Brazil	100.00%
Rolled Products		
Hydro Aluminium Rolled Products GmbH	Germany	100.00%
Hydro Aluminium Rolled Products AS	Norway	100.00%
Primary Metal		
Hydro Aluminium Australia Pty Limited	Australia	100.00%
ALBRAS - Alumínio Brasileiro SA	Brazil	51.00%
Sør-Norge Aluminium AS	Norway	100.00%
Slovalco a.s.	Slovakia	55.30%
Metal Markets		
Extrusion Services S.a.r.l	France	100.00%
Hydro Aluminium Gieβerei Rackwitz GmbH	Germany	100.00%
Hydro Aluminium Clervaux S.A.	Luxembourg	100.00%
Hydro Aluminium Iberia S.A.U	Spain	100.00%
Hydro Aluminium Deeside Ltd.	United Kingdom	100.00%
Hydro Aluminium Metals USA, LLC	United States	100.00%
Extruded Solutions		
Hydro Extrusion Nenzing GmbH	Austria	100.00%
Hydro Extrusion Lichtervelde NV	Belgium	100.00%
Hydro Building Systems Belgium NV	Belgium	100.00%
Hydro Precision Tubing Lichtervelde NV	Belgium	100.00%
Hydro Extrusion Raeren SA	Belgium	100.00%
Hydro Extrusion Brasil S.A.	Brazil	100.00%
Hydro Extrusion Ltda	Brazil	100.00%
Hydro Extrusion Canada Inc.	Canada	100.00%
Hydro Precision Tubing (Suzhou) Co. Ltd.	China	100.00%
Hydro Extrusion Denmark A/S	Denmark	100.00%
Hydro Precision Tubing Tønder A/S	Denmark	100.00%
Hydro Building Systems France SARL	France	100.00%
Hydro BuildEx S.a.r.l.	France	100.00%
Hydro Extrusion Lucé/Chateauroux SAS	France	100.00%
Hydro Extrusion Puget SAS	France	100.00%
Hydro Extrusion Albi SAS	France	100.00%
Hydro Extrusion Offenburg GmbH	Germany	100.00%
Hydro Extrusion Deutschland GmbH	Germany	100.00%
Hydro Building Systems Germany GmbH	Germany	100.00%
Hydro Extrusion Hungary Kft	Hungary	100.00%
Sapa Extrusion India Pvt. Ltd.	India	100.00%
Hydro Extrusion Italy Srl	Italy	100.00%
Hydro Building Systems Italy S.p.a.	Italy	100.00%
Hydro Extrusion Hoogezand B.V.	Netherlands	100.00%
Hydro Extrusion Drunen B.V.	Netherlands	100.00%
Hydro Extrusion Poland Sp. z.o.o	Poland	100.00%
Hydro Extrusion Slovakia a.s.	Slovakia	100.00%
Hydro Building Systems Spain S.L.U.	Spain	100.00%
Hydro Extrusion Spain S.A.U.	Spain	100.00%
Hydro Extrusion Sweden AB	Sweden	100.00%
Hydro Extrusion UK Ltd.	United Kingdom	100.00%
Hydro Components UK Ltd.	United Kingdom	100.00%
Hydro Building Systems UK Ltd	United Kingdom	100.00%
Hydro Extrusion USA LLC	United States	100.00%
Hydro Extrusion Delhi LLC	United States	100.00%
Hydro Extrusion North America LLC	United States	100.00%
Hydro Extruder LLC	United States	100.00%
Hydro Extrusion Portland Inc	United States	100.00%
Hydro Precision Tubing USA LLC	United States	100.00%
Energy		
Røldal Suldal Kraft as	Norway	91.26%

Net loss in 2018 and net gain in 2017 on sale of subsidiaries refers to sale of Herøya Nett AS.

Note 8 - Related party information

See note 11 Related party information in the notes to the consolidated financial statements for identification of related parties and primary relationships with those parties.

Norsk Hydro ASA operates the cash pooling arrangements in Hydro. Further, Norsk Hydro ASA extends loans to subsidiaries, associates and jointly controlled entities at terms and conditions reflecting prevailing market conditions for corresponding services, allowing for a margin to cover administration and risk. See note 5 Financial income and expense for information on interest paid to and received from group companies.

Norsk Hydro ASA allocates costs for corporate staff services and shared services to subsidiaries. The total amount allocated was NOK 122 million in 2018 and NOK 96 million in 2017. Receivables related to such costs amounted to NOK 122 million and NOK 93 million per December 31, 2018 and 2017, respectively.

For information on transactions with employees and management, see note 3 Management remuneration, employee costs and auditor fees and note 9 Management remuneration in the notes to the consolidated financial statements. For information on transactions with Board of Directors and Corporate Assembly see note 10 Board of Directors and Corporate Assembly in the notes to the consolidated financial statements. See note 11 for information on guarantees provided on behalf of subsidiaries and jointly controlled entities.

Note 9 - Specification of balance sheet items

Amounts in NOK million	**2018**	2017
Securities	**535**	535
Prepaid pension	**4,046**	4,221
Investments in associates	**-**	48
Other non-current assets	**152**	138
Total prepaid pension, investments and other non-current assets	**4,733**	4,943
Pension liability	**2,675**	2,499
Deferred tax liabilities	**394**	365
Other long-term provisions	**304**	356
Total long-term provisions	**3,373**	3,219

Other long-term provisions include an onerous contract of office space, see note 11 Related party information in the notes to the consolidated financial statements.

Note 10 - Financial instruments

Norsk Hydro ASA offers currency derivatives to subsidiaries using such instruments for risk management. Contracts are recognized at estimated market value, determined by calculating the contractual cash flows using currency rates at the balance sheet date and discounting those cash flows to a present value. At the end of 2018 and 2017, the value of currency forward contracts outstanding with subsidiaries were as follows:

Amounts in NOK million	**2018**	2017
Currency forward contracts, short-term	**10**	5
Currency forward contracts, long-term	**91**	8
Financial income, net	**100**	13

The contracts represent exposure mainly in Euro. In addition, there are some contracts with exposure to US dollars, British pounds, Swiss franc, Danish krone, Swedish krone, Japanese yen and Turkish lira, representing lower amounts. The contracts mature no later than 2023.

Note 11 - Guarantees

Norsk Hydro ASA provides guarantees arising in the ordinary course of business including stand-by letters of credit, performance bonds and various payment or financial guarantees. All commercial guarantees are on behalf of subsidiaries.

Amounts in NOK million	**2018**	2017
Guarantees related to jointly controlled entities	**348**	22
Commercial guarantees	**3,585**	3,449
Total guarantees not recognized	**3,934**	3,471

Note 12 - Long-term debt

Amounts in NOK million	**2018**	2017
USD	**588**	833
SEK	**2,915**	3,007
NOK	**4,497**	4,497
Total unsecured loans	**8,000**	8,337
Less: Current portion	**(2,768)**	(281)
Total long-term debt	**5,232**	8,056

As of December 31, 2018, long-term debt that falls due after 2023 amounted to NOK 999 million. See note 34 Short and long-term debt in notes to the consolidated financial statements for further information.

Note 13 - Number of shares outstanding, shareholders and equity reconciliation

The share capital of Norsk Hydro ASA as of December 31, 2018 was NOK 2,271,760,107 consisting of 2,068,998,276 ordinary shares at NOK 1.098 per share. As of December 31, 2018, Norsk Hydro ASA had purchased 22,695,479 treasury shares at a cost of NOK 756 million. See Consolidated statements of changes in equity and note 38 Shareholders' equity for additional information.

The table shows shareholders holding one percent or more of the total 2,046,302,797 shares outstanding as of December 31, 2018, according to information in the Norwegian securities' registry system (Verdipapirsentralen).

Name	Number of shares
The Ministry of Trade, Industry and Fisheries of Norway	708,865,253
Folketrygdfondet	139,282,717
State Street Bank and Trust Comp[1)]	82,340,647
Clearstream Banking S.A.[1)]	51,247,405
Banque Pictet & Cie SA[1)]	33,616,323
HSBC Bank PLC [1)]	31,517,490
JPMorgan Chase Bank, N.A., London[1)]	30,910,699
Vanguard International Growth FD	30,534,386
Verdipapirfondet Dnb Norge (IV)	26,281,231
State Street Bank and Trust Comp[1)]	25,308,950
Euroclear Bank S.A./N.V.[1)]	21,654,422

1) Nominee accounts.

Changes in equity

Amounts in NOK million	Paid-in capital	Retained earnings	Total equity
December 31, 2017	31,342	29,738	61,080
Net income		1,015	1,015
Remeasurement postemployment benefits		(353)	(353)
Dividend paid in 2018 not accrued[1)]		(3)	(3)
Dividend proposed		(2,558)	(2,558)
Treasury shares	31	52	83
December 31, 2018	31,373	27,891	59,265

1) Owners of shares sold from treasury shares in April 2018 received dividends for those shares in May 2018. However, this was not accrued in 2017.

Responsibility statement

We confirm to the best of our knowledge that the consolidated financial statements for 2018 have been prepared in accordance with IFRS as adopted by the European Union, as well as additional information requirements in accordance with the Norwegian Accounting Act, that the financial statements for the parent company for 2018 have been prepared in accordance with the Norwegian Accounting Act and generally accepted accounting practice in Norway, and that the information presented in the financial statements gives a true and fair view of the assets, liabilities, financial position and result of Norsk Hydro ASA and the Hydro Group for the period. We also confirm to the best of our knowledge that the Board of Directors' Report includes a true and fair review of the development, performance and financial position of Norsk Hydro ASA and the Hydro Group, together with a description of the principal risks and uncertainties that they face, and that the country by country report for 2018 has been prepared in accordance with the Norwegian Accounting Act §3-3d and the Norwegian Security Trading Act §5-5a.

Oslo, March 12, 2019

Dag Mejdell
Chair

Irene Rummelhoff
Deputy chair

Arve Baade
Board member

Finn Jebsen
Board member

Liselott Kilaas
Board member

Sten Roar Martinsen
Board member

Thomas Schulz
Board member

Svein Kåre Sund
Board member

Marianne Wiinholt
Board member

Svein Richard Brandtzæg
President and CEO

Independent auditor's report

To the Annual Shareholders' Meeting of Norsk Hydro ASA

Report on the Audit of the Financial Statements

Opinion
We have audited the financial statements of Norsk Hydro ASA. The financial statements comprise:

- The financial statements of the parent company Norsk Hydro ASA (the "Company"), which comprise the balance sheet as at 31 December 2018, and the income statement, and cash flow statement for the year then ended, and notes to the financial statements, including a summary of significant accounting policies, and
- The consolidated financial statements of Norsk Hydro ASA and its subsidiaries (the "Group"), which comprise the balance sheet as at 31 December 2018, and income statement, statement of comprehensive income, statement of changes in equity, cash flow for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion:

- The financial statements are prepared in accordance with the law and regulations.
- The accompanying financial statements give a true and fair view of the financial position of the Company as at 31 December 2018, and its financial performance and its cash flows for the year then ended in accordance with the Norwegian Accounting Act and accounting standards and practices generally accepted in Norway ("NGAAP").
- The accompanying consolidated financial statements give a true and fair view of the financial position of the Group as at 31 December 2018, and its financial performance and its cash flows for the year then ended in accordance with International Financial Reporting Standards as adopted by the EU ("IFRS").

Basis for Opinion
We conducted our audit in accordance with laws, regulations, and auditing standards and practices generally accepted in Norway, including International Standards on Auditing (ISAs). Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the Company and the Group as required by laws and regulations, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Key Audit Matters
Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the financial statements of the current period. These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Environmental clean-up cost and asset retirement obligations
Refer to Note 5 Critical accounting judgement and key sources of estimation uncertainty, Note 35 Provisions and Note 36 Contingent liabilities and contingent assets

The key audit matter

The Group is involved in operations such as bauxite mining, alumina refining, primary aluminium production and extrusion activities.

There is an inherent risk that these operations may generate significant obligations related to site restoration, reforestation and other remediation work. Such potential obligations are dependent on the jurisdictions in which the company operates and changes in the relevant political and legislative environments.

Management decisions to expand, curtail or terminate operations in specific locations can impact obligations as described above.

Estimating and calculating these obligations requires significant management judgement. The risk of inaccurate estimates is increased due to the uncertainty of scope and timing of such obligations and the limited amount of historical data available.

The Group has recognized environmental clean-up provisions and asset retirement obligations of NOK 4,299 million as explained in note 35 and disclosed information pertaining to contingent liabilities in note 36.

How the matter was addressed in our audit

Our audit procedures in this area included:

- Performing retrospective reviews of the accuracy of management's estimates in terms of timing, cash outflows and other assumptions where historical data is available
- Assessing the estimated cost and timing of activities applied in the calculations by comparing management forecasts with prior year estimates
- Comparing management's assumptions to relevant market data to test the reasonableness of discount rates, inflation rates, foreign exchange rates and other key assumptions used in the calculations
- Assessing the accounting treatment for compliance with IFRS and consistency of application, in particular related to the extent to which obligations are capitalized or expensed and the amortization period for capitalized assets
- Testing the mathematical accuracy of the models used to calculate provisions and asset retirement obligations
- Assessing the adequacy of the disclosures pertaining to estimation uncertainty, provisions, contingent liabilities and subsequent events.

Impairment of goodwill, intangible and non-current assets

Refer to Note 5 Critical accounting judgment and key sources of estimation uncertainty, Note 20 Impairment of non-current assets, Note 29 Property, plant and equipment, Note 30 Intangible assets and Note 31 Goodwill.

The key audit matter

The Group's operations are sensitive to certain commodity prices and other factors, including aluminum and alumina prices, energy prices, inflation rates, relevant foreign exchange rates and production volumes which impact key assumptions in cash flow forecasts and can give rise to impairment indicators.

The economic environment and volatility of long-term assumptions indicate that impairment could be a risk related to specific assets and cash generating units and can also impact the assessment of impairment of goodwill. In 2018, following the curtailment of operations in Brazil, management's estimates related to the timing of the return to full capacity is a key assumption impacting the impairment testing of goodwill and certain assets in Brazil.

Management exercise judgement related to expected timing of future cash flows and key assumptions related to commodity and other prices, growth rates, foreign exchange rates, discount rates and production volumes.

As at 31 December 2018, the Group has goodwill of NOK 6,584 million, Property, plant and equipment of NOK 71,299 million and intangible assets of NOK 4,858 million. No impairment has been recognised during 2018.

How the matter was addressed in our audit

Our audit procedures in this area included:

- Assessing management's process and results for identification and classification of CGU's and assessing whether they were appropriate and in accordance with relevant accounting standards
- Evaluating management's assessment of impairment indicators
- Performing retrospective reviews of the accuracy of management's estimates in terms of timing of cash outflows and other assumptions such as long-term pricing where historical data is available
- Evaluating and challenging the forecasted cash flows including timing of future cash flows applied in the models with reference to historical accuracy and approved business plans
- Testing the sensitivity of movements in key assumptions
- Evaluating, with assistance from our valuation specialists, key assumptions such as aluminium and alumina prices, inflation rates, energy and fuel prices, relevant foreign exchange rates and discount rates by reference to external sources and relevant benchmarks
- Testing the mathematical accuracy of the models used to calculate value in use
- Assessing the adequacy of the disclosures related to impairment

Tax assets and liabilities

Refer to Note 5 Critical accounting judgement and key sources of estimation uncertainty, Note 24 Income Tax, Note 26 Trade and other receivables, Note 28 Other non-current assets and Note 36 Contingent liabilities and contingent assets.

The key audit matter

The Group's global operations create exposures to different tax regimes with complex legislation. The Group has recognized significant tax assets related to tax credits and losses carried forward and has exposure to tax claims in several jurisdictions.

The volume of tax credits is significant and the assessment of recoverability is dependent on interpretation of laws and regulations which may be subject to change over time.

Recoverability of deferred tax assets related to losses carried forward are assessed based on estimates of future taxable profits and are judgmental in nature.

Tax provisions and contingent liabilities are recognized and disclosed based on management's assessment of the probability of a future cash outflow and also the ability to reliably estimate the amount of any obligation. Due to the complexity of the various tax regimes in which the Group operates, there is significant judgement involved in these assessments.

As of 31 December 2018, the Group has recognized an asset of NOK 4,154 million in current and non-current Income taxes, VAT and other sales taxes and recognized deferred tax assets of NOK 1,664 million including deferred tax assets related to losses carried forward and taxes payable of NOK 2,266 million.

How the matter was addressed in our audit

Our audit procedures in this area included:

- Assessing the eligibility of tax credits recognized as assets and the recoverability of these amounts
- Assessing the judgment applied to the recognition of deferred tax assets and the reversal or recoverability of these within the many tax jurisdictions
- Assessing the process for identification of uncertain tax positions and management's assessment of the probable outcome
- Using our knowledge of local jurisdictions and involvement of our local tax specialists where deemed relevant to obtain an overview of the local requirements relevant to management's judgements and conclusions for significant estimates
- Reading available correspondence with relevant tax authorities to identify potential tax contingencies and for the basis of accounting entries and disclosures
- Challenging management as to which cases and exposures are significant and the level of corresponding disclosures to be included in the Annual report

Other information

Management is responsible for the other information. The other information comprises the information included in the Annual Report, with the exception of the financial statements and the Independent auditor's report.

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

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

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of the Board of Directors and the President and CEO ("Management") for the Financial Statements

The Board of Directors and the President and CEO ("Management") are responsible for the preparation in accordance with law and regulations, including fair presentation of the financial statements of the Company in accordance with NGAAP, and for the preparation and fair presentation of the financial statements of the Group in accordance with IFRS, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Company’s and the Group’s ability to continue as a going concern, disclosing, as applicable, matters related to going concern. The financial statements of the Company use the going concern basis of accounting insofar as it is not likely that the enterprise will cease operations. The financial statements of the Group use 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.

Auditor’s Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the 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 laws, regulations, and auditing

standards and practices generally accepted in Norway, including 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 aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with laws, regulations, and auditing standards and practices generally accepted in Norway, including ISAs, we exercise professional judgment and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error. We 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 Company's or 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 Company and 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 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 Company and the Group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the 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, related safeguards.

From the matters communicated with the Board of Directors, we determine those matters that were of most significance in the audit of the 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.

Report on Other Legal and Regulatory Requirements

Opinion on the Board of Directors’ report
Based on our audit of the financial statements as described above, it is our opinion that the information presented in the Board of Directors’ report and in the statements on Corporate Governance and Corporate Social Responsibility concerning the financial statements, the going concern assumption, is consistent with the financial statements and complies with the law and regulations.

Opinion on Registration and Documentation
Based on our audit of the financial statements as described above, and control procedures we have considered necessary in accordance with the International Standard on Assurance Engagements (ISAE) 3000, *Assurance Engagements Other than Audits or Reviews of Historical Financial Information*, it is our opinion that management has fulfilled its duty to produce a proper and clearly set out registration and documentation of the Company's accounting information in accordance with the law and bookkeeping standards and practices generally accepted in Norway.

Oslo, 12 March 2019
KPMG AS

Lars Inge Pettersen
State Authorised Public Accountant

Note: This translation from Norwegian has been prepared for information purposes only.

Statement of the Corporate Assembly to the Annual general meeting of Norsk Hydro ASA

The Board of Directors' proposal for the financial statements for the financial year 2018 and the Auditors' report have been submitted to the corporate assembly.

The Corporate Assembly recommends that the directors' proposal regarding the financial statements for 2018 for the parent company, Norsk Hydro ASA, and for Norsk Hydro ASA and its subsidiaries be approved by the annual general meeting, and that the net income for 2018 of Norsk Hydro ASA be appropriated as recommended by the directors.

Oslo, March 12, 2019

Terje Venold

Viability performance statements

230 About the reporting

231 Environmental statements

232 Notes to the environmental statements

232 Note E1 Greenhouse gas emissions
237 Note E2 Other emission related indicators
239 Note E3 Energy
240 Note E4 Other resource use
242 Note E5 Waste
244 Note E6 Biodiversity
246 Note E7 Production volumes
246 Note E8 Environmental data for 50/50-owned companies

247 Social statements

248 Notes to the social statements

248 Note S1 Employees
252 Note S2 Remuneration
253 Note S3 Diversity in management
254 Note S4 Employee Engangement
254 Note S5 Health and safety
257 Note S6 Labor rights
258 Note S7 Current income tax
259 Note S8 Research & Development (R&D)
259 Note S9 Community investments, charitable donations and sponsorships
259 Note S10 Compliance
263 Note S11 Spending on local suppliers
263 Note S12 Public affairs and lobbying
264 Note S13 Certifications
264 Note S14 Social data for 50/50-owned companies

265 GRI Standards

265 UN Global Compact Communication on progress

265 UN Sustainable Development Goals

265 UN Guiding Principles on Business and Human Rights

266 ICMM

266 ASI

267 Task Force on Climate-related Financial Disclosures (TCFD)

269 Independent auditor's assurance report

About the reporting

Principles for reporting on viability performance
The purpose of Hydro's reporting is to provide stakeholders with a fair and balanced picture of relevant aspects, engagements, practices and results for 2018 at a corporate level. We believe that the reporting in total satisfies this purpose. Our reporting on viability performance is aligned with the main reporting principles of the GRI Standards (2018) and the requirements of the International Council on Mining and Metals. The selection of elements reported is based on extensive dialogue with stakeholders. In addition, the reporting builds on processes that are part of our daily operations. Important stakeholders include authorities, investors and financial analysts, employees and their representatives, potential employees, customers, non-governmental organizations and local communities affected by major development projects or restructuring processes. Reporting is not necessarily the target of the dialogue process, but when relevant, we use the outcome to improve our reporting, see page 91.

We have endeavored to provide information that is in accordance with the principles of sound reporting practice. The absence of generally accepted reporting standards and practices in certain areas may nevertheless make it difficult to compare results with reports compiled by other companies, without the availability of further data, analyzes and interpretations.

For more information about the Alunorte situation, please see the previous section in this report.

Reporting scope and limitation
The scope of Viability performance as included on page 77 in Hydro's Annual Report 2018, is Hydro's global organization for the period January 1 to December 31, 2018. Operations sold or demerged during the year have in general not been included. Health and safety data for all previously consolidated operations are, however, included in the historical data for the period the unit was owned by Hydro. Regarding environmental data (emissions, energy consumption etc.), operations acquired during the reporting year are included for the complete year. Data from operations that have been closed down, are included for the part of the reporting period it was under operation unless otherwise stated. Minority-owned operations is not included in the reported data except from data based on ownership minority (certain greenhouse gas emissions data), certain qualitative information as well as additional data for 50/50-owned companies, see note E8 and S14.

Environmental data relating to acquired operations are included in our statistics, and historical data have been recalculated to reflect current operations. Correspondingly, historical data of divested activities are taken out of our reported data. Employee, safety and work environment data are included from/to the closing date of acquisitions/divestments unless otherwise stated.

Data has been prepared from individual reports in accordance with corporate procedures. Data compiled at each operational unit according to local management systems applicable at the respective operational units are typically based on process data systems, measurements, calculations and/or purchasing data. The data are then aggregated at corporate level, and is not intended to include detailed information that is primarily of significance for individual sites, processes, activities and products.

The reporting is based on input from many units and sources of data. Emphasis has been placed on ensuring that the information is neither incomplete nor misleading. However, the scope of the reporting, and varying certainty of data may result in some inherent uncertainties. Please see "Reporting principles" for the specific note to the environmental or social statements for more details.

Main reporting changes
The main changes to the Viability performance reporting in Hydro's Annual Report 2018 compared to 2017, mainly relates to further aligning the reporting on data from Extruded Solution to the other business areas in Hydro.

Remaining differences
In 2018, Extruded Solutions has been integrated in Hydro’s Enviromental reporting system. Due to a difference in conversion factors, adjustments in definitions, and other categories, the data may in some cases deviate from the data reported in Hydro’s Annual Report 2017.

Historical figures for the Dalles Cast, Bedwas, Utinga and Tubarao are not available.

Where information is reported separately for Extruded Solutions and the rest of Hydro, this is marked either in headlines, the text itself or as footnote. Where there is no such marking, the information relates to Hydro as of 31 December 2018.

Assurance principle and scope
We have requested our company auditor to review the Viability performance 2018 in accordance with the international audit standard ISAE 3000 – Assurance Engagements other than Audits or Reviews of Historical Financial Information issued by the International Auditing and Assurance Standards Board (IAASB). For the underlying systems, the reader is referred to Hydro's steering documents as described under Corporate Governance, see page 134 in Hydro's Annual Report 2018. The auditor's limited assurance report is found on page 269.

Environmental statements

The table below shows Hydro's main quantitative indicators related to its environmental performance. More detailed information is, when indicated, available in the notes to the environmental statements.

Environmental performance

	Notes	%-change 2017-2018	**2018**	2017	2016	2015	2014	GRI Standards reference[8)]
GHG emissions								
Direct GHG emissions from consolidated operations (Million tons CO2e) (equal to scope 1)	E1.1	-20%	**6.53** [7)]	8.18	8.12	7.84	7.86	305-1
Indirect GHG emissions from consolidated operations (Million tons CO2e) (equal to scope 2)	E1.1	-9%	**3.19** [7)]	3.52	3.49	3.40	3.35	305-2
Direct GHG emissions from Hydro's ownership equity (Million tons CO2e) (equal to scope 1)[1)]	E1.4	-17%	**7.04** [7)]	8.44	8.45	8.15	8.15	305-1
Indirect GHG emissions from Hydro's ownership equity (Million tons CO2e) (equal to scope 2)[1)]	E1.4	-1%	**5.74** [7)]	5.80	5.74	5.64	5.57	305-2
GHG intensity								
Alumina refining (mt CO2e per mt alumina)	E1.6	15%	**0.79** [7)]	0.69	0.69	0.69	0.69	305-4
Electrolysis in Primary Metal (mt CO2e per mt aluminium)[2)]	E1.7	1%	**1.60** [7)]	1.59	1.61	1.60	1.62	305-4
Energy production and consumption								
Energy production (TWh)	E3.1	-1%	**10.69**	10.83	11.30	10.90	10.2	
Energy consumption (TWh)	E3.1	-14%	**45.75** [7)]	52.92	53.11	51.32	50.48	302-1/302-4
Energy intensity								
Alumina refining (GJ per mt alumina)	E3.2	13%	**8.95** [7)]	7.94	8.07	8.01	7.99	302-3
Electrolysis process (MWh per mt aluminium)	E3.2	0%	**13.90**	13.92	13.89	13.90	13.88	302-3
Other resource use								
Alumina (Thousand mt)	E4.1	-6%	**3,161**	3,353	3,331	3,256	3,153	301-1
Total water withdrawal from water stressed areas (million m3)[3)]	E4.2	-13%	**0.33**	0.38				303-1/303-2
Recycling								
Recycled post-consumer scrap (Thousand mt)[4)]	E4.3	6%	**161**	152	138	134	111	301-2
Total recycled metal (Thousand mt)[4)]	E4.3	3%	**1,142**	1,105	1,078	990	981	301-2
Waste (Thousand mt)								
Bauxite tailings	E5.1	-48%	**2,116** [7)]	4,067	4,117	4,128	4,333	MM3
Bauxite residue (red mud)	E5.1	-47%	**3,191** [7)]	5,979	6,426	5,973	6,069	MM3
Hazardous waste[3)]	E5.2	-12%	**268**	303	282	284	-	306-4
Other waste[3)]	E5.2	-19%	**327**	403	354	365	-	306-2
Hazardous waste to landfill (percent)[3)]	E5.3	5 pp[5)5)]	**28%**	33%	33%	33%	34%	306-2
Biodiversity in mining								
Accumulated area disturbed (hectares)[6)]	E6.2	19%	**7,879**	6,613	6,442	6,076	5,734	MM1
Accumulated area rehabilitated (hectares)	E6.2	18%	**2,203**	1,872	1,689	1,509	1,231	MM1
Accumulated endangered species observed[3)]	E6.3	19%	**89**	75	65	57		102-11

Figures in brackets indicate a decrease.

1) Combined numbers based on ownership equity
2) Includes fully-owned smelters
3) 2014 figures are not comparable to more recent figures due to change in methodology
4) Excluding Extruded Solutions
5) Values are given as percentage points
6) Accumulated area disturbed since construction of the mining area started. The mine started its production in 2006
7) Results impacted by the embargo on Alunorte, and curtailment of Albras and Paragominas.
8) All GRI references below refers to the GRI Standards (2016) except MM1 and MM3 which refer to the GRI G4 Mining and Metals Sector Supplement

Notes to the environmental statements

General reporting standards and principles

Environment, energy and resource data are reported through the corporate data reporting tool HERE on an annual basis covering all consolidated operational units (defined as Hydro's ownership share exceeding 50 percent). Data reported to HERE should be based on specific environmental, energy and resource data reporting processes that have been established for management purposes at site, business unit, business area, and corporate level within Hydro. Data are reported on a 100 percent basis for all consolidated operational units if not otherwise stated. All environmental emissions include historical emissions from current operations and are recalculated annually to reflect Hydro's current portfolio, and secure comparability.

Data reported in HERE are in accordance with Hydro's corporate procedure "Registration of environment, resource and energy data". The procedure provides definitions and factors for estimating emission values. Data are compiled at each operational unit according to local environmental management systems and typically based on process data, measurements, calculations and/or purchasing data.

During 2018, Extruded Solutions' historical environmental data has been imported into HERE. During this import period, historical data has been reviewed, and may to some extent vary from the data reported last year. This is mainly due to improved data quality. In 2019, we will prioritize to enhance the waste reporting for sites not currently using the EU Waste Catalog.

Where applicable, we have indicated to which GRI Standards disclosure the different notes or parts of the notes are relevant.

Note E1 – Greenhouse gas emissions

Reporting principles
GHG emissions have been calculated based on the principles of the WRI/WBCSD GHG Protocol. Direct emissions from production in Bauxite & Alumina, metal production and downstream operations as well as from the remelters, are comparable to Scope 1 emissions as defined by WRI/WBCSD GHG Protocol.

Indirect emissions, emissions from electricity generation, are calculated based on electricity consumption and emissions factors from the IEA CO2 Emissions from Fuel Combustion (2016) and are comparable to scope 2 emissions from purchased electricity. The 2014 factors are the most recently available factors and have been used for 2015 reporting and onwards.

We report indirect emissions according to the location-based method in the revised GHG Protocol Scope 2 Guidance. However, we have chosen not to report indirect emissions according to the market-based approach, as this method does not give the correct picture of physical realities.

As Hydro is an integrated company, with ownership along the whole aluminium value chain, the majority of Hydro's emissions are covered within scope 1 and 2 emissions. Scope 3 emissions are normally relevant for external transport, contributing with significantly less than 5 percent of Hydro's total greenhouse gas emissions, and thus within our anticipated error margin of less than 5 percent. Hydro has a long position in alumina, but due to the production embargo at Alunorte in 2018, we had to source more alumina from external sources. Sourced alumina increased by 1.4 million metric tons in 2018 to 4.0 million mt, compared to 2017. As Alunorte's greenhouse gas emissions performance level is quite close to the global average, we assume that purchased alumina during 2018 has a similar GHG intensity as Alunorte.

E1.1 Total greenhouse gas emissions in consolidated activities

Reporting principles
Greenhouse gas emissions are reported per process step. For information purposes we have indicated in which business area (financial segment) the emissions mainly take place. There may be uncertainties related to data from Extruded Solutions, please see the relevant section in About the reporting.

Hydro's consolidated direct greenhouse gas emissions per business area

Greenhouse gas emissions - consolidated activities

Million tons CO2e	**2018**	2017	2016	2015	2014
Direct GHG emissions	**6.53**	8.17	8.11	7.83	7.85
Bauxite & Alumina	**2.64**	4.14	4.16	3.94	3.96
Primary aluminium production (mainly Primary Metal)	**3.04**	3.18	3.13	3.06	3.07
Rolled Products	**0.16**	0.16	0.17	0.16	0.17
Remelters (in Metal Markets and Rolled Products)	**0.13**	0.14	0.12	0.12	0.11
Extruded Solutions[1)]	**0.56**	0.55	0.54	0.55	0.54
Indirect GHG emissions	**3.18**	3.51	3.48	3.39	3.34
From electricity generation (mainly primary aluminium production)	**3.18**	**3.51**	**3.48**	**3.39**	**3.34**
Total GHG emissions	**9.71**	11.68	11.59	11.23	11.18

1) Extruded Solutions have some remelters

GRI-reference: GRI Standards 305-1 (2016) and GRI Standards 305-2 (2016)

Hydro's direct and indirect emissions have decreased significantly in 2018 due to the embargo at Alunorte, and curtailment at Albras and Paragominas. The ramp-up of the Karmøy Technology Pilot has contributed to an increase in emissions.

E1.2 Total greenhouse gas emissions per country in consolidated activities

Reporting principles
Total greenhouse gas emissions per country in Hydro's consolidated activities (based on 100 percent). There may be uncertainties related to data from Extruded Solutions, please see the relevant section in About the reporting.

Greenhouse gas emissions per country - consolidated activites

Million tons CO2e	**2018**	2017	2016	2015	2014
Brazil	**4.10**	6.16	6.15	5.90	5.94
Direct	**3.24**	4.96	4.94	4.75	4.77
Indirect	**0.86**	1.20	1.20	1.15	1.17
Germany	**1.85**	1.84	1.82	1.79	1.72
Direct	**0.51**	0.49	0.50	0.48	0.46
Indirect	**1.34**	1.34	1.33	1.31	1.26
Norway	**1.94**	1.87	1.86	1.77	1.79
Direct	**1.82**	1.75	1.75	1.66	1.68
Indirect	**0.12**	0.12	0.12	0.11	0.11
Slovakia	**0.72**	0.73	0.72	0.72	0.71
Direct	**0.32**	0.32	0.32	0.32	0.32
Indirect	**0.40**	0.40	0.40	0.40	0.39
Other[1)]	**1.09**	1.09	1.04	1.04	1.02
Direct	**0.64**	0.64	0.61	0.62	0.61
Indirect	**0.45**	0.45	0.43	0.41	0.40
Total GHG emissions	**9.71**	11.68	11.59	11.23	11.18

1) Including Extruded Solutions

GRI-reference: GRI Standards 305-1 (2016) and GRI Standards 305-2 (2016)

Hydro’s direct and indirect emissions have decreased significantly in 2018 due to the embargo at Alunorte, and curtailment at Albras and Paragominas. The increase in emissions in Norway is mainly related to the ramp-up of the Karmøy Technology Pilot.

E1.3 Direct GHG emissions per GHG type in consolidated activities

Reporting principles
CO2 emissions are calculated based on anode consumption during the electrolysis process and use of other fossil fuels. PFC (perfluorocarbon) emissions consist of the two greenhouse gases CF4 and C2F6 which are formed during anode effect situations in the aluminium electrolytic cells. Anode effect is mainly a result of production instability, e.g. in connection to power outages. Emissions are calculated based on automatic process measurements.

Direct GHG emissions per GHG type - consolidated activites

Million tons CO2e	**2018**	2017	2016	2015	2014
CO2	**6.29**	7.95	7.89	7.62	7.60
PFC	**0.23**	0.21	0.23	0.21	0.25
Total GHG emissions	**6.53**	8.17	8.11	7.83	7.85

Hydro’s direct and indirect emissions have decreased significantly in 2018 due to the embargo at Alunorte, and curtailment at Albras and Paragominas. The increase in PFC emissions are mainly related to a different alumina quality due to reduced supply of alumina from Alunorte.

E1.4 Total greenhouse gas emissions based on ownership equity

Reporting principles
In addition to the GHG emissions referred to above, we also report GHG emissions based on our ownership equity as per year end. This data includes Hydro's share of emissions from all operations including non-consolidated operations where Hydro has a minority interest. This figure is comparable to scope 1 according to the GHG protocol. Electricity generation covers indirect GHG emissions from purchased electricity and emissions from Hydro's ownership share in the gas-fired power plant at Qatalum. This figure is comparable to scope 2 according to the GHG protocol. Emissions from electricity generation are based on electricity consumption and IEA CO2 emissions from Fuel Consumption 2014 factors (the most recent published) for emissions. For 2013, the actual emissions factors are used.

Greenhouse gas emissions - ownership equity

Million tons CO2e	**2018**	2017	2016	2015	2014
Direct GHG emissions	**7.04**	8.44	8.45	8.15	8.15
Bauxite & Alumina	**2.43**	3.81	3.83	3.62	3.64
Primary aluminium production (mainly Primary Metal)	**3.62**	3.65	3.65	3.56	3.55
Rolled Products	**0.30**	0.30	0.31	0.30	0.30
Remelters (mostly Metal Markets)	**0.13**	0.14	0.12	0.12	0.11
Extruded Solutions	**0.56**	0.54	0.54	0.55	0.54
Indirect GHG emissions	**5.74**	5.80	5.74	5.64	5.57
Electricity generation (mainly primary metal production)	**5.74**	5.80	5.74	5.64	5.57
Total GHG emissions	**12.78**	14.24	14.19	13.79	13.71

GRI-reference: GRI Standards 305-1 (2016) and GRI Standards 305-2 (2016)

Hydro's production based on ownership equity can be found under Operational review in the section Financial and operating performance in this report. Hydro's direct and indirect emissions have decreased significantly in 2018 due to the embargo at Alunorte, and curtailment at Albras and Paragominas.

E1.5 Total greenhouse gas emissions per country based on ownership equity

Reporting principles
Total greenhouse gases per country based on Hydro's ownership equity (see note E1.4 for more information on reporting principles).

Greenhouse gas emissions per country - ownership equity

Million tons CO2e	**2018**	2017	2016	2015	2014
Australia	**0.91**	0.89	0.89	0.89	0.85
Direct	**0.15**	0.14	0.14	0.15	0.14
From electricity generation	**0.77**	0.75	0.75	0.74	0.71
Brazil	**3.24**	4.90	4.92	4.69	4.72
Direct	**2.75**	4.23	4.24	4.04	4.06
From electricity generation	**0.49**	0.67	0.68	0.64	0.66
Canada	**0.50**	0.51	0.50	0.50	0.49
Direct	**0.25**	0.26	0.25	0.26	0.26
From electricity generation	**0.25**	0.25	0.25	0.25	0.23
Germany	**2.14**	2.13	2.11	2.08	2.00
Direct	**0.65**	0.63	0.63	0.61	0.60
From electricity generation	**1.49**	1.49	1.48	1.46	1.40
Norway	**1.94**	1.87	1.86	1.77	1.79
Direct	**1.82**	1.75	1.75	1.66	1.68
From electricity generation	**0.12**	0.12	0.12	0.11	0.11
Qatar[1)]	**2.52**	2.42	2.41	2.39	2.37
Direct	**0.57**	0.57	0.60	0.60	0.55
From electricity generation	**1.95**	1.85	1.81	1.79	1.82
Slovakia	**0.40**	0.40	0.40	0.40	0.40
Direct	**0.18**	0.18	0.18	0.18	0.18
From electricity generation	**0.22**	0.22	0.22	0.22	0.22
Other	**1.13**	1.13	1.09	1.07	1.08
Direct	**0.67**	0.68	0.66	0.65	0.68
From electricity generation	**0.46**	0.45	0.43	0.42	0.41
Total GHG emissions	**12.78**	14.24	14.19	13.79	13.71

1) Most electricity at Qatalum is generated by Qatalum's fully-owned gas power plant. 0.072 million tons CO2e came from purchased electricity from the national grid in 2018

GRI-reference: GRI Standards 305-1 (2016) and GRI Standards 305-2 (2016)

Hydro's direct and indirect emissions have decreased significantly in 2018 due to the embargo at Alunorte, and curtailment at Albras and Paragominas. The increase in emissions in Norway is mainly related to the ramp-up of the Karmøy Technology Pilot.

E1.6 GHG intensity – Alunorte alumina refinery

Reporting principles
The GHG intensity is calculated based on total greenhouse gas emissions from Alunorte divided by total alumina production. All alumina refining in Hydro is included.

E1.7 GHG intensity – Electrolysis

Reporting principles
The GHG intensity is calculated based on greenhouse gas emissions from the electrolysis process from Hydro's smelters in the business area Primary Metal. This is an operational target that excludes extraordinary emissions, e.g. during start-up of curtailed capacity. The methodology for calculation is site specific, and historical figures may be subject to change. Emissions from the primary aluminium smelter Neuss in Germany, organized in the business area Rolled Products, are not included. As the GHG emissions from Neuss are at the average, they will not have a significant impact on the overall figure.

Note E2 – Other emission related indicators

E2.1 Other emissions

Reporting principles
Dust and particles include measured and calculated/estimated stack emissions. Diffuse emissions are not included.

Fluorides cover emissions to air of gaseous and particulate fluorides from production of primary aluminium.

NMVOC (non-methane volatile organic compounds) emissions to air stems primarily from Rolled Products and Extruded Solutions.

PAH (poly-aromatic hydrocarbons) to air is primarily from anode production. Emissions are measured according to NS 16 PAH, or PAH-16 US EPA.

PAH to water is from anode production and is measured according to Borneff 6 PAH.

Sulfur dioxide to air is primarily from the use of coal as an energy source in Alunorte, Brazil, and from the aluminium electrolysis process where the majority of the total emissions come from Albras in Brazil, Neuss in Germany and Slovalco in Slovakia. SO_2 emissions from the Norwegian smelters are considerably lower due to different waste gas treatment techniques used at these plants.

Other Emissions

Metric tons	**2018**	2017	2016	2015	2014
Dust and particles	**2,860**	4,783	4,347	5,101	5,276
Fluorides to air	**663**	700	684	742	715
NM VOC	**444**	475	472	524	439
Nitrogen oxide	**7,720**	9,755	9,622	9,347	9,781
PAH to air	**15.5**	9.1	9.8	10.0	11.3
PAH to water (Borneff 6 PAH)	**0.2**	0.2	0.3	0.4	0.5
Sulphur dioxide (SO2)	**18,498**	32,968	33,343	30,177	33,522

GRI-reference: GRI Standards 305-7 (2016)

Hydro’s emissions of dust and particles, nitrogen oxide and sulphur dioxide decreased significantly in 2018 due to the embargo at Alunorte, and curtailment at Albras. Following renewed environmental permits for Hydro Sunndal, their PAH to air measurements follow PAH-16 US EPA. Subsequently more substances are included, explaining the significant increase in emissions.

Hydro uses ozone depleting substances in certain applications in its Brazilian operations, and to some extent also in Extruded Solutions. In 2018, Hydro used in total 5.6 metric tons of such substances in its operations. The reported value corresponds to the purchased amount of such substances and can vary significantly according to the need of refilling existing cooling devices. In Brazil, such substances are registered and reported according to Brazilian legal requirements (GRI 305-6). In Extruded Solutions hydrochlorofluorocarbon (HCFC) makes around one third of ozone depleting substances.

Methane (CH_4) and N_2O emissions from Hydro's operations are negligible compared to the other GHG emissions.

The emissions of mercury to air has been calculated to be around 3 metric tons at full production.

E2.2 Spillages and leakages

Reporting principles
Spillages and leakages to the external environment (ground, water or air) are registered in Synergi and in IMS, the reporting tools for incidents regarding health, safety, security and environment. According to Hydro's definition, any incident resulting in a spill or leak shall be reported, including significant spillages with short-term reversible damage. Leakages categorized as high severity, i.e. uncontained but reversible impact or uncontained and irreversible impact, and emissions to external environment categorized as high severity, i.e. unintended and sustained, are reported in the table below. A spillage or leakage can be reclassified according to changes in the actual consequence of the spillage or leakage, and historical figures are updated. Several reported incidents can be closely related and therefore classified as the same spillage.

The reporting on environment incidents will be reviewed in 2019, with the aim to harmonize the reporting between Extruded Solutions and the other business areas in Hydro, and ensure a consistent follow up.

Spillages and leakages to the external enviroment

	2018	2017	2016	2015	2014
Spillages, leakages	**7**[1)]	1	3	-	1

1) The reported incidents mainly relate to leakages to air in Norway

Ibama (Brazilian Institute of the Environment and Renewable Natural Resources) and Semas (the Secretary of State for Environment and Sustainability in Pará) concluded there were no overflow or leaks from Alunorte's bauxite residue deposits following the heavy rainfall in February 2018. For more information see the section "The Alunorte situation" earlier in this report.

E2.3 Permit breaches

Reporting principles
Permit breaches are based on monthly monitoring, and reported in Synergi and IMS. Hydro's definition of permit breaches, any incident that in any way relates to an environmental permit, is in certain cases more strict than the legal definition. Permit breaches categorized as high severity, requiring regulator contact or permit breaches with possible fine or suspension, are included in the table below. The reported permit breaches may be related to spillages and leakages covered in the table above. Several reported incidents can be related to the same permit and will be reported as one breach. Historical figures may be subject to change due to time lag in administrative procedures.

Permit breaches

	2018	**2017**	2016	2015	2014
Permit breaches	**23**	25[1)]	1	-	-

1) Figures from Extruded Solutions, acquired 2 October 2017, are included for the full year.

The majority of the permit breaches are non-compliances to laws, regulations or permits in Extruded Solutions. The reporting on environment incidents will be reviewed in 2019, with the aim to harmonize the reporting between Extruded Solutions and the other business areas in Hydro, and ensure a consistent follow up. The figure also includes in total four permit breaches in Bauxite & Alumina of which three at Alunorte: the use of Canal Velho; rainwater from the roof of a coal shed; and the leakages through a disused pipe. For more information see the section "The Alunorte situation" earlier in this report.

E2.4 Provisions for environmental clean-up and future asset retirement obligations

Reporting principles
When Hydro, at acquisition of an asset or start of a business activity, has an obligation to remove, dismantle or remediate the asset or site used, that obligation is included in the cost of the asset with the present value of estimated remediation costs. The same treatment is applied if an obligation to remove, dismantle or remediate the asset is introduced at a later date, through new legislation or other means. For Hydro's accounting policy for provisions and asset retirement obligations, see note 149 Significant accounting policies to Hydro's financial statements. For information about provisions for environmental clean- up and asset retirement obligations (ARO) and environmental liabilities see notes 197 and 199 to the consolidated financial statements.

Note E3 – Energy

E3.1 Energy consumption and energy production

Reporting principles
Energy consumption includes Hydro produced as well as purchased energy in Hydro's consolidated activities. Hydro has a nominal production of 10 TWh hydroelectric power. Hydro's business areas, except from Extruded Solutions, does not purchase heating, cooling or steam, which is produced internally and is reported as "other" energy consumptions. Extruded Solutions purchases steam and heat, but the volumes are minimal. Energy consumption includes energy losses in hydroelectric plants.

Energy consumption per energy carrier - consolidated activites

PJ	**2018**	2017	2016	2015	2014
Coal	**13.2**	15.2	15.2	13.5	14.6
Coke	**17.3**	18.5	18.7	18.5	18.0
Electricity	**97.5**	103.0	103.7	99.7	97.3
Gasoline	**0.1**	0.1	0.2	0.4	0.5
Natural gas	**15.8**	16.8	16.3	16.0	15.6
Natural gas liquids	**1.5**	1.5	1.6	1.5	1.8
Oil	**15.0**	30.7	30.9	30.7	29.5
Other	**4.3**	4.5	4.5	4.4	4.4
Total energy consumption in PJ	**164.7**	190.5	191.2	184.7	181.7
Total energy consumption in TWh	**45.8**	52.9	53.1	51.3	50.5

Energy consumption per sector - consolidated activities

PJ	**2018**	2017	2016	2015	2014
Bauxite & Alumina	**30.2**	48.2	48.9	46.4	46.6
Electrolysis/Carbon/Casting	**113.1**	120.1	120.6	116.9	113.9
Remelters	**2.6**	2.7	2.6	2.5	2.4
Rolled Products	**3.3**	4.3	4.3	4.3	4.2
Extruded Solutions	**15.3**	15.0	14.6	14.5	14.3
Other	**0.2**	0.2	0.2	0.3	0.2
Total energy consumption	**164.7**	190.5	191.2	184.8	181.8

Energy consumption per country - consolidated activites

PJ	**2018**	2017	2016	2015	2014
Brazil	**54.0**	81.3	81.2	78.3	78.5
Germany	**15.9**	16.9	16.8	16.5	15.8
Norway	**65.9**	63.4	64.8	61.9	59.6
Slovakia	**12.5**	12.5	12.5	12.3	12.2
Other[1)]	**16.4**	16.5	16.0	15.8	15.6
Total energy consumption	**164.7**	190.5	191.2	184.8	181.8

GRI Reference: GRI Standards 302-1 (2016)

Energy consumption in 2018 has been affected by the embargo on Alunorte, and the subsequent curtailment of production on the primary aluminium smelter Albras and the bauxite mine Paragominas. The ramp-up of the Karmøy Technology Pilot has contributed to an increase in emissions.

E3.2 Energy intensity

Reporting principles
Energy intensity in Alunorte is calculated based on total energy consumption in Alunorte divided by total alumina production.

Energy intensity in Hydro's consolidated smelters is direct current consumption in the electrolysis process per kg aluminium.

Note E4 – Other resource use

E4.1 Materials

Reporting principles
Covers major raw materials used in the alumina refining process and electrolysis process beyond what is included in the energy consumption data.

Alumina and aluminium fluoride are primarily used in the electrolysis process, whilst lime, caustic soda (NaOH), sulfuric acid and flocculants are primarily used in the alumina refining process. Flocculants are also used at Paragominas.

The use of lime, caustic soda and sulfuric acid varies with the production of alumina, see note E7. The use of sulfuric acid depends also on the amount of rainfall and management of caustic soda at Alunorte.

Materials

1 000 metric tons	**2018**	2017	2016	2015	2014
Alumina	**3,161**	3,353	3,331	3,256	3,153
Aluminium fluoride	**31**	31	32	33	31
Lime	**35**	62	60	57	60
Caustic soda	**376**	662	653	604	624
Sulphuric acid	**29**	28	26	17	26
Flocculants	**3**	7	6	5	5

GRI Reference: GRI Standards 301-1 (2016)

The decrease in caustic soda is due to the Alunorte embargo.

E4.2 Water

Reporting principles
Some water loss to the external environment will occur as evaporation and/or steam. This water loss is not included in the figures below, which assume that water discharged is equal to water withdrawn. The quality of water discharge generally complies with local or site-specific permits before discharge to local water recipients and is of a high quality, as per ICMM's definition.

The majority of Extruded Solutions' sites has a closed loop water management system, and the water use is marginal compared to the rest of Hydro. The majority of water use in Extruded Solutions takes place in Oregon in USA, and in Sweden.

Total water withdrawal by country

million m^3	**2018**	2017	2016	2015	2014
Brazil	**49.85**[1)]	35.85	33.28	32.80	31.93
Germany	**2.06**	2.25	2.13	2.20	2.20
Norway	**218.85**	195.51	196.50	195.87	186.14
Other	**10.68**	10.57	6.74	5.92	6.48
Total	**281.44**	244.19	238.65	236.78	226.74

1) Includes 23.5 million m^3 of rainwater not used in the process, but it is treated and discharged. Alunorte has improved the monitoring of rainwater, and the figure may not be comparable to historical figures. The figure varies with percipitation.

Total water withdrawal by source

Million m³	Total 2018	Brazil	Germany	Norway	Other	Total 2017[1)]
Surface water (fresh water)	**69.84**	**15.31**	**-**	**49.56**	**4.97**	65.99
Surface water (sea water)	**168.57**	**-**	**-**	**168.57**	**-**	143.51
Ground water	**12.96**	**11.01**	**1.89**	**-**	**0.05**	14.81
Municipal water	**6.14**	**0.04**	**0.16**	**0.73**	**5.22**	1.31
Rain water	**23.90**	**23.49[2)]**	**0.01**	**-**	**0.40**	6.61
Total water withdrawal	**281.41**	**49.85**	**2.06**	**218.85**	**10.65**	232.23
Re-used water	**11.23**	**7.78[3)]**	**-**	**3.45[4)]**	**-**	22.99
Re-used water as percentage of fresh water withdrawal	**10%**	**16%**	**0%**	**7%**	**0%**	26%

1) Excluding Extruded Solutions.
2) Includes 23.5 million m3 of rainwater not used in the process, but it is treated and discharged. Alunorte has improved the monitoring of rainwater, and the figure may not be comparable to historical figures. The figure varies with percipitation.
3) Alunorte uses waste-water from another organization, Paragominas.
4) The definition of reused water has changed, but there are no inherent process change. Historical figures are not comparable.

GRI-reference: GRI Standards 303-3 (2018)

Almost 80 percent of Hydro's total water withdrawal occurs in Norway from fjords (sea water) and rivers (fresh water) that supply these fjords. These water sources are vast and are not significantly affected by Hydro's operations. All sea water withdrawal in Norway is used in fume treatment plants enabling the primary production smelters to clean dust, SO2 and fluoride emissions to air. Sea water absorbs the pollutants and mitigates the environmental impact from the production process. Around 5 percent of Hydro's total water withdrawal comes from the Parariquara river in Brazil and is used to supply the mine in Paragominas. Based on new hydrological studies of the Parariquara river, Paragominas' water extraction permits were revised in 2018. However, water collection can still be an issue if a new third-party user requests water extraction from the same watershed. If so, a new license will be needed for an additional extraction point.

There has been a water tax within the state of Pará since 2015.

Hydro's water increase in Norway relates mainly to the start up of the Karmøy Technology Pilot.

Withdrawal from water-stressed areas

Million m3	2018	2017	2016	2015	2014
Total water withdrawal from water-stressed areas[1)]	0.33	0.38	2.19	2.28	2.30

GRI reference: GRI Standards 303-3 (2018)

Hydro uses the WBCSD global water tool to analyze water withdrawal from water stressed areas. From 2017 we have used an updated version of the tool. Extruded Solutions are included from 2017.

Total water discharge by destination

Million m³	Total 2018	Brazil	Germany	Norway	Other	Total 2017[1)]
River (surface water)	**50.41**	**29.37**	**0.04**	**17.43**	**3.58**	43.14
Seawater	**200.95**	**-**	**-**	**200.95**	**-**	174.08
Sewage (third-party water)	**4.79**	**0.04**	**0.12**	**0.48**	**4.16**	0.76
Cooling water to river	**3.12**	**-**	**1.59**	**-**	**1.53**	1.56
Other (not specified)	**17.96**	**16.29**	**0.29**	**-**	**1.38**	12.40
Total water discharge by destination	**277.24**	**45.70**	**2.04**	**218.85**	**10.65**	232.20

1) Excluding Extruded Solutions

GRI Reference: GRI Standards 303-4 (2018)

E4.3 Recycling

Reporting principles
Hydro uses a definition for recycling agreed on by the European Aluminium Association. The definition was implemented in Hydro in 2013. The definition divides recycled scrap in two: process scrap, which includes pre-consumer scrap from

downstream casthouses, and post-consumer scrap. Reporting of recycling data is drawn from the company's production software and ERP system.

The numbers include Hydro's share of scrap recycled by Alunorf, Germany (owned 50 percent), and also Hydro's share of pre-consumer scrap from Qatalum and Slovalco. Qatalum and Slovalco do not have recycling facilities for post-consumer scrap.

Recycling - excluding Extruded Solutions

1 000 metric tons	**2018**	2017	2016	2015[1)]	2014
Recycled post-consumer scrap	**161**	152	138	134	111
Recycled pre-consumer scrap	**1,142**	1,105	1,078	990	981
Total recycled metal	**1,303**	1,257	1,215	1,123	1,092

1) Volumes from Slim (divested at year-end 2015) are included up till 2015

While Extruded Solutions uses significant amounts of remelted pre-consumer scrap, we are still lacking an overview that is comparable with Hydro's definitions. In 2018, Extruded Solutions remelted in total 900,000 tons of external scrap of which an estimated 20 percent was post-consumer scrap. This comes in addition to the figures in the table above.

Note E5 – Waste

Note E5.1 Tailings and bauxite residue

Reporting principles
Tailings from bauxite extraction consist of mineral rejects from the extraction process mixed with water. The tailings at Paragominas are stored in dedicated tailings dams, where the particles settle. Paragominas is Hydro's only consolidated mine.

Bauxite residue, also known as red mud, is a by-product of the alumina refining process. The residue is washed with water to lower the alkalinity, and recovered caustic soda is recycled for use in the production process. Residue is dry-stacked as a claylike substance with a low moisture content (for more information 37).

Tailings and bauxite residue

1 000 metric tons[1)]	**2018**	2017	2016	2015	2014
Tailings	**2,116**	4,067	4,117	4,128	4,333
Bauxite residue (red mud)	**3,191**	5,979	6,426	5,973	6,069

1) On a dry basis

GRI Reference: G4-MM3

The significant decrease in 2018 is due to the Alunorte embargo (bauxite residue) and the corresponding Paragominas curtailment (tailings).

The tailings generated in the bauxite's beneficiation process have no hazardous chemical properties, thus it is not necessary to line the tailing dams.

As a control measure, static water pressures within the walls of our tailings dam at Paragominas are monitored through the use of dedicated instrumentation (piezometers).

E5.2 Hazardous waste and other waste

Reporting principles
Waste is reported as specified according to the EU waste directive/waste catalog. During 2015 and 2016, Primary Metal reviewed their waste reporting practices including classification of bi-products, resulting in even better standardization across business sites. Due to changes in reporting practice, the 2016 and 2015 figures are not directly comparable to previous years. Also in Bauxite & Alumina waste reporting was improved in 2016 and 2015. Figures from earlier years are not comparable, and are thus not included.

All European sites in Extruded Solutions reports according to the EU waste catalog and have entered their data in HERE accordingly. For the remaining sites, mainly the sites in the business units Extrusion North-America and Precision Tubing, the EU waste catalog will be implemented in 2019. Compared to last year, data quality on waste figures has improved, and is expected to improve further going forward.

Spent potlining (SPL) from the electrolysis cells used in primary aluminium production is defined as hazardous waste. The production of spent potlining varies with the relining of smelter cells which is normally done every 4-7 years for established smelters. New plants will get a relining peak at the same interval after start-up. See also SPL figures on a five year rolling average under the section on Environment under Primary Metal, page 45.

A significant amount of Extruded Solutions hazardous waste is in the form of spent caustic produced following the die cleaning process with a large proportion of this recycled.

Hazardous and other waste

1 000 metric tons	**2018**	2017	2016	2015
Spent potlining	**42.5**	40.4	34.2	42.3
Other hazardous waste	**225.2**	262.9	247.9	242.1
Total hazardous waste	**267.6**	303.3	282.0	284.4
Other waste	**326.9**	402.5	354.4	364.7
Total waste	**594.6**	705.8	636.5	649.1

GRI Reference: GRI Standards 306-4 (2016)

E5.3 Waste treatment

Reporting principles
Waste sorted by treatment includes external and internal treatment. Tailings and bauxite residue are deposited in appropriately engineered and managed on-site landfills and are not included in the table below. Combustion without energy recovery is included under Other treatment. There may be uncertainties related to data from Extruded Solutions, and we will work to further harmonize the reporting as we implement the EU Waste Catalog across the organization.

Treatment of hazardous waste

	2018	2017	2016	2015	2014
Energy recovery	**8%**	7%	7%	9%	7%
Landfill	**28%**	33%	33%	33%	34%
Other	**27%**	22%	21%	22%	26%
Reuse/recycling	**36%**	38%	39%	37%	33%

Treatment of other waste

	2018	2017	2016	2015	2014
Energy recovery	**4%**	4%	3%	3%	2%
Landfill	**27%**	45%	37%	43%	57%
Other	**16%**	14%	20%	18%	13%
Reuse/recycling	**53%**	37%	40%	36%	28%

GRI-reference: GRI Standards 306-2 (2016)

Note E6 – Biodiversity

E6.1 Overburden moved

Reporting principles
Total volume (in metric tons) of overburden moved in Hydro's mine in Brazil, Paragominas. This is the only mine within Hydro's consolidated operations.

Overburden moved					
Million metric tons	**2018**	2017	2016	2015	2014
Overburden moved	**48**	83	83	70	78

GRI Reference: G4-MM3

The 2018 reduction is due to the curtailment in Paragominas.

Hydro uses strip mining in Paragominas, a technique that avoids the formation of an overburden stockpile. Thus, all overburden moved for mining purpose is used to reconstruct the topography of the strip previously mined, prior to rehabilitation of the mined areas. Part of the overburden (laterite) is also used for paving roads and for raising the heights of existing tailing dams and constructing new ones.

The sterile soil is untreated and has no dangerous properties. Leaching potential due to overburden removal is negligible. There is a water resource management program in place to mitigate silting from the plateau areas.

E6.2 Land use and rehabilitation

Reporting principles
Hydro's only consolidated mining operation is in Paragominas in Brazil. Areas are measured using the ArcGIS Platform. The rehabilitation data are reported to ANM (the Brazilian National Mining Agency) and Semas (the Secretary of State for Environment and Sustainability in Pará), as part of the clearing permit renewal process.

In our mining operation we strive for a year-on-year balance between the area that we mine and make available for rehabilitation every year and the area that we succeed in rehabilitating every year. From 2018, this target is a rolling average across two hydrological seasons, and the categories for land-use have been redefined.

The 2020 target of closing the historical rehabilitation gap was achieved in 2018.

The mining cycle is made up of several steps. When a given area of land is to be developed, the first step is clearing, when vegetation and soil are removed. The area is then classified as area cleared for future mining. After an area is mined, it is either classified as tailings dams and other mining infrastructure or area available for rehabilitation. All areas available for rehabilitation will be rehabilitated as soon as possible and subsequently classified as an ongoing rehabilitation area.

When tailings dams are closed, they will become available for rehabilitation after settling for minimum five years. We will then get a significant increase in the tailings dam infrastructure available for rehabilitation. There may be additional movements between different statuses from year to year due to reclassification.

During 2018, we cleared 380 hectares (ha) for future mining. We mined 243 ha of which 129 ha were then dedicated to mining infrastructure. As a result, a total of 113 ha were mined and subsequently made available for rehabilitation during 2018. This area must be completely rehabilitated by the end of 2020 in order to meet the 1:1 rehabilitation target

Of the 151 ha made available for rehabilitation in 2017, 88 percent was rehabilitated in 2018. The remaining 12 percent will be completed in 2019 in order to meet the 1:1 rehabilitation target.

The clearing, mining and rehabilitation cycles are constantly ongoing and are not synchronized. Clearing and mining are at their peak in the dry season, whilst rehabilitation happens primarily in the wet season. The three cycles are also influenced by different drivers such as permits for the clearing cycle, land available for rehabilitation, and rainfall for the rehabilitation cycle. As a result, there is no direct link between the area cleared each year and the area mined or rehabilitated that same year (e.g. an area cleared in 2017 may be mined late 2018 and then rehabilitated in the 2019 wet season). Due in large part to this complexity, the figures presented above for 2018 can not be directly deducted from the figures in the land use and rehabilitation table below.

All areas stated in the table below give a snapshot of Paragominas' land use at year end.

Land use and rehabilitaition - Paragominas

Hectares given per point in time	**2018**	2017	2016	2015	2014
Permanent infrastructure[1)]	**2,397**	2,447	2,446	2,447	2,447
Tailings dam and other mining infrastructure[1)]	**2,472**	1,918	1,705	1,397	1,034
Area cleared for fututre mining	**380**	257	364	424	458
Ongoing rehabilitation areas[1)]	**2,203**	1,872	1,689	1,509	1,231
Rehabilitation gap	**296**	111	238	299	564
Historical gap[2)]	**-**	8			
Mined area available for rehabilitation	**131**				
Total area affected	**7,879**	6,613	6,442	6,076	5,734

1) The definition is updated, and historical data may not be comparable
2) The historical rehabilitation gap refers to the one inherited from Vale. Historical figures are not available

GRI Reference: G4-MM3

The rehabilitation gap is a result of ongoing operations, i.e. areas set aside for infrastructure being reclassified, or missed/failed/poor previous rehabilitation. In 2018, 170 ha were reclassified as failed rehabilitation, and 105 ha of former infrastructure became available for rehabilitation.

The Hydro Paragominas property measures in total 18,763 hectares (ha), while the land use at the end of 2018 was 7,499 ha, including 2,203 ha under rehabilitation.

There are specific closure plan requirements for the Paragominas mine (rehabilitation of mine and tailings ponds). In addition, there is a similar requirement for the bauxite residue disposal areas at Alunorte. Hydro has a dedicated corporate function which oversees legacy issues and addresses closure issues. For the time being such plans are further developed on an ad hoc basis when relevant, and a strategy is under development.

E6.3 Endangered species

Reporting principles
Hydro uses a federal database updated by ICMBio researchers to classify species. The conservation status of species registered in the reference databases can change. As a result, the species list is updated and species added, removed and/or moved from one status to another. Reported species are cumulative and represent all species observed within the premises of Hydro's mining activities in Paragominas, Brazil, since monitoring and registration started in 2003. Some species included in the overview are covered by more than one database and the numbers can therefore not be summed across the columns. In addition, each database is stand alone and they are therefore not comparable.

Endangered species registered within the influence area of Hydro's mining activities (Paragominas)

	MMA [1)]		Semas [2)]		IUCN [3)]	
Conservation status	Fauna	Flora	Fauna	Flora	Fauna	Flora
Critically endangered	3	2	2	1	2	1
Endangered	8	1	6	-	3	1
Vulnerable	27	2	8	7	17	15
Threatened	-	-	-	-	-	-
Near threatened	1	-	-	-	15	1
Data deficient	1	-	-	-	3	-
Total according to each red list classification	40	5	16	8	40	18

1) Federal Brazilian red list
2) Pará state red list
3) International Union for Conservation of Nature red list

GRI-reference: GRI Standards 304-4 (2016)

In total 89 different species, including 62 fauna and 27 flora, are covered by the overview. The total number increased by 14 in 2018, mainly due to the research effort by the Biodiversity Research Consortium Brazil-Norway, see page 92. We are expecting the number of new, unique species to increase going forward as we move into new territory.

Note E7 – Production volumes

Reporting principles
The figures reported below are total production volumes (100 percent) from consolidated activities only (Hydro's ownership share exceeding 50 percent). Alumina production includes Alunorte while primary aluminium production includes 100 percent of production at all Hydro's primary aluminium plants in Norway, Neuss in Germany, Slovalco in Slovakia and Albras in Brazil. These volumes are not directly comparable to the volumes reported in the financial statements. Alumina and primary aluminium production are by far the most energy and GHG intensive processes in Hydro.

Production volumes

1 000 metric tons	**2018**	2017	2016	2015	2014
Alumina production	**3,712**	6,397	6,341	5,962	5,933
Primary aluminium production	**1,653**	1,752	1,744	1,705	1,615

The reduction in Alumina production is due to Alunorte embargo and primary aluminium production is due to Albras entailment. The reduction is partly offset by the Karmøy Technology Pilot.

Hydro's production based on ownership equity can be found under Operational review in the section Financial and operating performance in this report.

Note E8 – Environmental data for 50/50-owned companies

Hydro has an ownership share of 50 percent in Alunorf and Qatalum. As only operations owned more than 50 percent are included in most of the information in Hydro's viability performance statements, we have chosen to disclose certain environmental information about these companies and their performance. The reporting principles of each indicator might differ from the ones used by Hydro and in between the companies. For information about social data, see Note S14 to the social statements.

Environmental data for 50/50-owned companies

	Main product	Production, 1 000 metric tons	GHG emissions, scope 1, Million tons CO2e	GHG emissions, scope 2, Million tons CO2e	Total energy consumption, TWh	Fresh water used, Million m3	Total waste disposed, metric tons	Total waste recycled, 1 000 tons
Alunorf	Rolled products	1,538[1)]	0.26	0.43	2.1	1.4	2,088	87%[2)]
Qatalum	Primary aluminium	644	4.8	0.25	9.37	0.58	9543	32%

1) The tonnage at Alunorf includes 25 mt of sheet ingots
2) Recycling degree of total waste

Social statements

The table below shows Hydro's main indicators related to social performance. For geographical distribution of total assets, investments and revenues, see note 7 to the consolidated financial statements.

Social performance

	Notes	% change 2017-18	**2018**	2017	2016	2015	2014	GRI Standards reference
Employees								
Number of permanent employees	S1.1	5%	**36,236**	34,625	12,911	13,263	12,922	102-7 (2016)
Share of women	S1.1	1 pp[1)]	**18%**	17%	14%	13%	13%	
Number of temporary employees[2)]	S1.2	2%	**1,680**	1,646	1,266	1,144	966	102-8 (2016)
Women in top 50 management	S3.1	5 pp[1)]	33%	28%	29%	30%	22%	405-1 (2016)
Non-Norwegians in top 50 management	S3.1	2 pp[1)]	**39%**	37%	32%	36%	35%	405-1 (2016)
Full-time equivalents for contractor employees	S1	17%	**10,500**	9,000	9,500	7,700	6,600	102-8 (2016)
New employees	S1.3		**5,141**	760[4)]	658	884	976	401-1 (2016)
Turnover	S1.3	8 pp[1)]	**12%**	4%	5%	5%	6%	401-1 (2016)
Hydro Monitor Employee Engagement Index	S4	1	**84%**		83%		73%	
Payroll (NOK million)	S1.1		**17,318**	7,258 [4)]	6,681	6,323	5,956	201-1 (2016)
Health and safety	S5							
Sick leave	S5.1	0.2 pp[1)]	**3.6 %**	**3.4 %**	**4.3 %**	**4.0 %**	**3.8 %**	403-2 (2018)
Total recordable injuries (TRI) rate[3)]	S5.1	17%	**3.4**	2.9	2.6	3	3.4	403-2 (2018)
Employees		13%	**3.5**	3.1	2.6	3	3.2	
Contractors		20%	**3**	2.5	2.6	3.1	3.8	
Number of fatal accidents	S5.1		**1**	2	-	1	-	403-2 (2018)
Employees			**1**	1	-	1	-	
Contractors			**-**	1	-	-	-	
High risk incidents	S5.2	59%	**202**	127	63	83	96	403-2 (2018)
Occupational illness rate[4)]	S5.3	67%	**0.5**	0.3	1	1.5	1.5	403-3 (2018)
Current income tax (NOK million)	S7	6%	**2,724**	2,575	1,988	1,414	1,605	
Research and Development (NOK million)								
R&D funds received[4)]	S8	-44%	**35**	62	46	51	66	201-4 (2016)
R&D expenses	S8	19%	**594**	500	370	330	277	
Social investments								
Community investments, charitable donations and sponsorships (NOK million)[4)]	S9	147%	**89**	36	28	30	24	
Compliance	S10							
Cases reported through AlertLine	S10.1		**342**	123	173	83	60	102-3 (2016)
Cases reported through AlertLine Extruded Solutions	S10.1			179				
Confirmed instances of corruption	S10.1		**1**	-	-	-	-	205-3 (2016)
Confirmed human rights breaches	S10.1		**-**	-	-	-	-	406-1/407-/408-1/409-1 (2016)
Relocation of people	S10.3		**-**	-	-	-	-	G4-MM9
Training in business ethics Hydro	S10.4	5%	**3,490**	3,331[4)]	4,561[4)]	2,244[4)]	3,570[4)]	412-2/205-2 (2016)
Training in competition law	S10.4	186%	**838**	293	202	1093	44	205-2 (2016)
Supplier audits	S10.5	-24%	**83[6)]**	109	123	129	61	HDD-01
Potential and existing counter parties screened	S10.5	110%	**13,000**	6,200	3,700	1,800		414-1 (2016)

Figures in brackets indicate a decrease.

1) Values are given as percentage points compared to previous year
2) There may be uncertainties related to data from Extruded Solutions, please see section on Uncertainties related to data from Extruded Solutions in About the reporting
3) Per million working hours. The numbers include discontinued operations
4) Excluding Extruded Solutions
5) Only line managers were invited to participate. Line managers further informed their teams
6) Excluding Extruded Solutions. In Extruded Solutions, 262 supplier audits were performed during 2018.

Notes to the social statements

General reporting standards and principles

Data relating to health, safety and work environment have been prepared by individual reporting units in accordance with corporate procedures. This applies to all Hydro's operations, including consolidated subsidiaries, if not otherwise stated. Such data are based on the corporate reporting system for incident reporting, IMS for Extruded Solutions and Synergi for the other business areas in Hydro. The units report incidents to the systems on a regular basis in accordance with a corporate procedure on HSE incidents and sick leave data. Employee data are reported based on Hydro's SAP system.

The reporting methodology will follow Hydro's principles, unless otherwise stated.

Where applicable, we have indicated to which GRI Standards disclosure the different notes or parts of the notes are applicable. Please also see the social statements on the previous page for more such information.

Note S1 – Employees

Reporting principles
Data for Hydro's permanent and temporary employees are based on Hydro's human resources SAP system. Data presented represent status at year end, December 31**.** Payroll is based on Hydro’s consolidated financial statements. Payroll, as provided in the table below, does not include pension costs.

Temporary employees include among others apprentices, but exclude contractor employees. Legal requirements and customs may vary from country to country, making direct comparison difficult.

Number of full-time equivalents of contractor employees as included in the social statements is estimated based on the total hours worked by contractor employees (reported in Hydro's incident reporting system Synergi and IMS as basis for calculation of injury frequency) divided by 1,850 working hours per year. Contractor employees represented in total about 10,500 full-time equivalents during 2018. The majority relates to Hydro's Bauxite & Alumina activities.

Extruded Solutions has a greater extent of seasonal variations than the other business areas in Hydro. This is solved in different ways in different parts of the organization and may include the use of agency workers. We still do not have the full overview of the extent of such use.

S1.1 Permanent employees by region, gender and age as well as payroll

Permanent employees by region, gender and payroll

	Number of employees[1]					Payroll (NOK million)[2] [3]				
	2018	2017	2016	2015	2014	**2018**	2017	2016	2015	2014
Norway	**4,050**	3,962	3,689	3,653	3,613	**3,591**	3,220	3,001	2,920	2,579
Women	21%	20%	19%	19%	18%					
Men	79%	80%	81%	81%	82%					
Germany	**4,909**	4,861	3,555	3,450	3,378	**3,265**	2,256	2,201	2,040	1,834
Women	12%	12%	10%	10%	10%					
Men	88%	88%	90%	90%	90%					
France	**1,883**	1,829	-	-	-	**954**				
Women	16%	16%								
Men	84%	84%								
Hungary	**1,675**	1,540	-	-	-	**541**				
Women	26%	24%								
Men	74%	76%								
Other Europe	**9,338**	8,864	735	1,133	1,106	**3,678**	201	223	341	320
Women	22%	21%	11%	13%	13%					
Men	78%	79%	89%	87%	87%					
Total Europe	**21,855**	21 056	7,979	8,236	8 097	**12,029**	5,677	5,425	5,301	4,733
Brazil	**5,658**	5,227	4,743	4,830	4,631	**1,158**	1,166	986	905	1,133
Women	13%	12%	13%	12%	12%					
Men	87%	88%	87%	88%	88%					
USA	**6,291**	5,954	-	-	-	**3,348**				
Women	15%	14%								
Men	85%	86%								
Rest of the world	**2,432**	2,388	189	197	194	**783**				
Women	18%	18%	23%	23%	26%					
Men	82%	82%	77%	77%	74%					
Total	**36,236**	34,625	12,911	13,263	12,922	**17,318**	7,258	6,681	6,323	5,956
Women	18%	17%	14%	13%	13%					
Men	82%	83%	86%	87%	87%					

1) Number of employees is based on where the employee actually is stationed, and will in some cases differ from the Country-by-country report, which shows in which legal company she or he is employed.

2) The joint operations Alunorf, Aluchemie, and Skafså are excluded from the payroll figures in the table above. Those entities are included in Hydro's financial statements on a line-by-line basis. Please see note 2 to the consolidated financial statements for more information about joint operations.

3) Payroll figures for Extruded Solutions is only available for 2018

GRI-reference: GRI Standards 201-1 (2016) and GRI Standards 102-8 (2016)

The increase in number of employees are partly due to the acquisition of Arconic's two extrusion plants in Brazil, the ramp-up of the Karmøy Technology Pilot and Husnes line B in Norway. In addition, we are establishing Global Business Services in Hungary and the increase in the USA is aligned with a slight increase in volume and a focus on added value.

When Hydro acquired Sapa in October 2017, the number of permanent employees increased by 21,378.

Age distribution permanent employees

Age distribution

	2018	2017	2016	2015	2014
Under 30	**15%**	15%	12%	13%	13%
30-49	**52%**	52%	54%	55%	56%
50 +	**33%**	32%	33%	32%	31%

GRI Reference: GRI Standards 405-1 (2016) and G4-EU15

S1.2 Employees by employment type and part-time employees

Total employees by employment type

Employment category	**2018**	2017	2016	2015	2014
Permanent - total[1)]	**36,236**	34,625	12,911	13,263	12,922
Temporary - total	**1,680**	1,646	1,266	1,144	966
Women	**27%**	23%	27%	27%	23%
Men	**73%**	77%	73%	73%	77%

1) For gender of permanent employees see Note S1.1

GRI Reference: GRI Standards 405-1 (2016) and G4-EU15

In Brazil the share of women among temporary employees is 48 percent, in Norway 28 percent, the USA 59 percent and Germany 14 percent.

Part-time employees include all persons being employed in positions that are not full-time (less than 100 percent).

Part-time employees

Part-time employees[1)]	**2018**	2017	2016	2015	2014
Norway	**1.5 %**	1.9 %	2.0 %	2.4 %	3.2 %
Women	**4.2 %**	5.6 %	3.5 %	7.7 %	10.4 %
Men	**0.8 %**	1.0 %	1.6 %	1.2 %	1.6 %
Total employees	**1.3 %**	1.6 %	1.2 %	1.4 %	1.6 %
Women	**4.9 %**	6.2 %	5.7 %	10.2 %	8.6 %
Men	**0.5 %**	0.6 %	0.6 %	0.4 %	0.5 %

1) Data for 2018 includes 98 percent of Hydro's permanent employees globally. We are working to further improve our reporting

GRI Reference: GRI Standards 102-8 (2016)

Hydro employees normally work full-time. The opportunity to work part-time is considered a benefit for which a special application must be made.

S1.3 New employees and turnover

New employee hires by age group, gender and country

	Age								
	2018				2017				2016
Region and gender	**Total**	**Under 30**	**30-49**	**50+**	Total	Under 30	30-49	50+	Total[1)]
Brazil	**1,002**	**282**	**646**	**74**	393	153	217	23	235
Women	19%	28%	16%	12%	9%	11%	8%	4%	19%
Men	81%	72%	84%	88%	91%	89%	92%	96%	81%
Germany	**211**	**68**	**110**	**33**	90	33	52	5	186
Women	17%	19%	13%	24%	12%	14%	12%	0%	12%
Men	83%	81%	87%	76%	88%	86%	88%	100%	88%
Norway	**114**	**32**	**77**	**5**	154	44	87	23	167
Women	32%	25%	29%	27%	35%	45%	32%	17%	23%
Men	68%	75%	71%	73%	65%	55%	68%	83%	77%
USA	**1,821**	**767**	**800**	**254**	123	36	70	17	70
Women	19%	16%	21%	20%	28%	11%	37%	29%	13%
Men	81%	84%	79%	80%	72%	89%	63%	71%	87%
Other	**1,993**	**742**	**1,010**	**241**	123	36	70	17	70
Women	27%	25%	29%	27%	28%	11%	37%	29%	13%
Men	73%	75%	71%	73%	72%	89%	63%	71%	87%
Grand total	**5,141**	**1,891**	**2,643**	**607**	760	266	426	68	658
Women	22%	21%	23%	22%	17%	18%	17%	14%	17%
Men	78%	79%	77%	78%	83%	82%	83%	86%	83%

1) Extruded Solutions are not included for 2017 and 2016

GRI-references: GRI Standards 401-1 (2016), G4-EU15

The employee turnover rate includes resignations, retirements and manning reductions, but excludes closures and divestments. For 2018, we have included Extruded Solutions and improved our turnover calculation. The calculation is now based on the number of people starting and leaving at the end of the month.

Employee turnover by age group, gender and country

	Age								
	2018				2017[1)]				2016[1)]
Region and gender	**Total**	**Under 30**	**30-49**	**50+**	Total	Under 30	30-49	50+	Total
Brazil	**11%**	**11%**	**10%**	**17%**	6%	5%	6%	11%	6%
Women	15%	23%	12%	22%	9%	6%	9%	25%	7%
Men	11%	9%	10%	17%	6%	4%	5%	11%	6%
Germany	**4%**	**7%**	**3%**	**4%**	2%	1%	1%	3%	2%
Women	3%	5%	3%	3%	2%	0%	1%	2%	2%
Men	4%	7%	3%	4%	2%	1%	1%	3%	2%
Norway	**5%**	**7%**	**3%**	**7%**	4%	3%	1%	7%	4%
Women	4%	4%	3%	6%	4%	7%	2%	6%	4%
Men	5%	8%	2%	7%	4%	2%	1%	7%	4%
USA	**24%**	**45%**	**24%**	**15%**					
Women	33%	66%	33%	17%					
Men	22%	41%	21%	14%					
Other	**12%**	**27%**	**9%**	**8%**	7%	16%	7%	6%	8%
Women	9%	19%	7%	8%	2%	17%	3%	0%	8%
Men	13%	29%	10%	8%	8%	16%	8%	6%	8%
Grand total	**12%**	**25%**	**11%**	**9%**	4%	4%	4%	6%	5%
Women	14%	26%	12%	9%	5%	6%	5%	6%	5%
Men	12%	25%	11%	9%	4%	4%	3%	6%	5%

1) Extruded Solutions not included

GRI-references: GRI Standards 401-1 (2016), G4-EU15

Note S2 – Remuneration

Reporting principles
Data on gender related salary differences is based on local salary systems. Data on "highest paid employee" is based on note 9 in Hydro's consolidated financial statements for Norway, and from local salary systems in Germany and Brazil.

S2.1 Gender related salary differences

All employees shall receive a total compensation that is competitive and aligned with local industry standard (but not market leading). The compensation should also be holistic, performance oriented, transparent, fair and objective. Salaries in the organization are reviewed on a regular basis. There are no significant gender-pay differentials for employees earning collective negotiated wages in Norway, Germany and Brazil.

Following the integration of Extruded Solutions, the USA and Hungary have become significant countries of operations for Hydro. For 2018, we have looked into the salary differences for all Hydro employees in Hungary, and based on overall figures we find no significant gender related salary differences.

We have also looked into the salary conditions for all Hydro employees in the USA, including the remelters, extrusion plants and precision tubing facilities. Based on our initial analysis, on average there are no significant gender related salary differences.

We will further analyze salary differences related to equal pay conditions.

S2.2 Highest paid employee

Highest paid employee includes fixed salary, pension, health insurance (Brazil only) and other benefits, but excludes bonuses. Any severance pay is excluded from the highest paid employee calculation to ensure consistency.

Highest paid employee per country

NOK thousand	% change, 2017-18	**2018**	2017	2016
Brazil	-53%	**2,387**	5,058	4,393
Germany	-	**3,663**		
Norway	20%	**12,910**	10,744	9,268

GRI-reference: GRI Standards 102-38 (2016) and GRI Standards 102-39 (2016)

Please see note 9 to the Consolidated financial statements for more information.

S2.3 Standard entry level wage

Entry level wages have been checked for some significant locations of operation. In Brazil, entry level wages are controlled by the labor agreement. The ratio compared to national minimum wage was in 2018 both for women and men 1.25 in Barcarena and 1.89 in Paragominas.

In Germany and Norway the entry level wages are defined by tariff agreements. In the Norwegian operations, minimum entry wage is about 11 percent higher than the tariff minimum. In the German operations, the entry wage is 18 percent higher than the countrywide tariff minimum wage.

For Extruded Solutions' significant location of operations, Hungary, we have reviewed entry level wage. The standard entry level wage compared to national average does not deviate in Hungary. In the USA, the most significant country of operations for Extruded Solutions, we are still working to get the overview.

GRI reference: GRI Standards 202-1 (2016)

Note S3 – Diversity in management

S3.1 Women and non-Norwegians in management

Reporting principles
Diversity data for the board of directors and Corporate Management Board (CMB) for Norsk Hydro ASA are counted per year end. Diversity data for "Top 50 managers" include level 1 and 2 managers, i.e. the members of CMB and the members of the management teams at the level below CMB. At year end 2018 this included 111 persons. For "Top 200 managers", the data are based on the list of persons invited to the Hydro Summit in September 2018, in total 309 persons. The Hydro Summit is an annual meeting for top management in Hydro. The participants are nominated by the line organization.

Diversity in management

	Women					Non-Norwegians				
	2018	2017	2016	2015	2014	**2018**	2017	2016	2015	2014
Board of directors (9 members)[1]	**33%**	33%	30%	30%	30%	**11%**	22%	20%	20%	20%
Corporate assembly	**33%**	33%	39%	39%	35%	**-**	-	**-**	-	-
Corporate Management Board	**40%**	40%	44%	44%	29%	**10%**	20%	11%	11%	29%
Top 50 managers	**33%**	28%	29%	30%	22%	**39%**	37%	32%	36%	35%
Top 200 managers	**25%**	21%	25%	24%	22%	**56%**	51%	45%	48%	43%

1) With three women among the six shareholder elected members in the board of directors, Hydro complies with Norwegian legal requirements. All three employee representatives in the board of directors are men

GRI-reference: GRI Standards 405-1 (2016)

S3.2 Local representation in senior management

Reporting principles
Senior management is defined as the management group at each site (site managers and those reporting to them) in addition to business area management teams. Local is defined at country level for Norway, Hungary, USA and Germany, and at state level for Brazil.

Local representation in senior management

Share of senior management hired from local community	**2018**	2017	2016	2015	2014
Norway					
Production sites in Norway	**97%**	100%	100%	100%	100%
Primary Metal management team	**91%**	90%			
Germany					
Grevenbroich plant	**100%**	100%	100%	100%	100%
Rolled Products management team	**50%**	55%	55%	69%	80%
Brazil					
Paragominas, Pará	**8%**	9%	11%	18%	23%
Barcarena, Pará	**13%**	15%	21%	26%	29%
Bauxite & Alumina management team	**0%**				

GRI-reference: GRI Standards 202-2 (2016)

Of the ten members of the Bauxite & Alumina management team in Brazil, half are Brazilian citizens.

Hydro employs locals when necessary competence and capacity are available and normally uses expatriates only to secure employee development and the transfer of values and competence. Open positions in Hydro are normally posted at hydro.com and in local media. To secure competence transfer, it is important that there are also senior employees with experience from other units. This may even be the case at the blue-collar level, especially during start-up of new plants or equipment.

Note S4 – Employee engagement

Reporting principle
Hydro Monitor is normally carried out for all employees every second year.

The Employee Engagement Index (EEI) measures the extent to which employees are motivated to contribute to organizational success, and are willing to apply discretionary effort to accomplishing tasks important to the achievement of organizational goals. The Performance Excellence Index (PEI) measures among other things to which degree systems and processes are in place.

The long-term ambition is to be among the top 25 percent companies worldwide on EEI (IBM External norm) which is currently equivalent to 78 percent. There is no external norm for the PEI index.

Hydro Monitor

	2018	2017	2016	2015	2014
Employee Engagement Index (EEI)	**84%**	N/A	83%	N/A	73%
Women	**86%**	N/A	85%	N/A	74%
Men	**83%**	N/A	82%	N/A	73%
Performance Excellence Index (PEI)	**82%**	N/A	82%	N/A	75%
Response rate	**88%**	N/A	89%	N/A	92%

Hydro Monitor is a tool to work with organizational development, therefore the most important part is follow-up of agreed actions. In 2018, the survey was performed without Extruded Solutions. A new survey will be formed in 2019, including all Hydro employees.

All units that participated in the survey in 2018 had action plans by 1 October 2018, based on their survey results.

Sapa Engaged was Sapa's employee engagement survey, carried out in 2015 and 2017. The target group was all employees. In 2017, the response rate was 88 percent. The survey is not directly comparable with Hydro Monitor. To read more about Sapa's employee engagement survey see Hydro's Annual Report 2017.

Note S5 – Health and Safety

Reporting principles
Standardized statistics are prepared and reported to management on a monthly basis. Data covers all organizational units within Hydro, including sales offices and administrative functions

Workers (own employees and contractor employees as defined in note S5.1) are included during the period they are employed by or otherwise in service for Hydro.

S5.1 Total recordable injuries (TRI), Lost time injury (LTI) and sick leave

Total recordable injuries (TRI) index is calculated as the number of TRI per one million hours worked. TRI include LTI + RWC + MTC.

Lost time injury (LTI) is a personal injury at work leading to unfitness for work and absence beyond the day of the accident.

Restricted work case (RWC) is a personal injury at work that does not lead to absence beyond the day of the accident, because of alternative job assignment.

Medical treatment case (MTC) is treatment, other than first aid, administered by a physician or registered professional personnel under the standing orders of a physician.

Employees are workers under direct supervision of Hydro.

Contractors are workers who are under contract to execute work for Hydro, and who are under the direct supervision of the contractor, but at Hydro premises under Hydro's indirect supervision.

Sick leave for Hydro globally includes all absence due to injuries, work related and other illness, measured as number of hours lost due to sick leave as percent of number of hours worked plus number of hours lost due to sick leave.

Sick leave, Norway includes all absence due to illness, measured as number of days lost due to sick leave as percent of number of possible working days excluding holidays.

There are challenges in ensuring consistent reporting practice on sick leave across the company due to legislative and cultural differences between countries.

Total recordable injuries, lost-time injuries, fatal accidents and sick leave[1)]

	2018	2017[2)]	2016	2015	2014
Total recoradable injuries (TRI)	**301**				
Employees	**243**				
Contractors	**58**				
Total recoradable injuries rate (TRI)[3)]	**3.4**	2.9	2.6	3.0	3.4
Employees	**3.5**	3.1	2.6	3.0	3.2
Contractors	**3.0**	2.5[4)]	2.6	3.1	3.8
Lost-time inuries (LTI)	**147**				
Employees	**118**				
Contractors	**29**				
Lost-time injuries rate (LTI)[5)]	**1.7**	2.1	0.9	1.2	1.3
Employees	**1.7**	1.4	1.2	1.4	1.5
Contractors	**1.5**	0.6[4)]	0.6	0.9	1.1
Total number of fatal accidents	**1**	2	-	1	-
Employees	**1**	1	-	1[6)]	-
Contractors	**-**	1	-	-	-
Sick leave, percent	**3.6 %**	3.4 %	4.3 %	4.0 %	3.8 %
Sick leave, Norway	**4.0 %**	4.0 %[4)]	4.4 %	4.3 %	4.4 %
Women	**4.3 %**	4.7 %	4.8 %	4.9 %	5.2 %
Men	**3.5 %**	3.8 %	4.3 %	4.2 %	4.2 %

1) The numbers include discontinued operations.
2) Extruded Solutions are included from 2 October 2017.
3) Number of recordable injuries per million working hours.
4) Excluding Extruded Solutions. Working hours for Extruded Solutions in 2017 can not be split between employees and contractor workers.
5) Number of lost-time injuries per million working hours.
6) A Hydro employee became victim of the Germanwings crash on business travel.

GRI-reference: GRI Standards 403-9 (2018)

A Hydro employee lost his life in November. The fatality occurred in Hungary when moving products by overhead travelling crane at a production line inside the plant. The accident has been subject to external as well as internal investigation.

In 2019, we will deploy fatality prevention protocols and associated lifesaving rules and behaviours across all business areas, as well as identify and share best practices more effectively through a revised HSE auditing process and use of digital tools.

The fatality prevention protocols, also known as the “critical seven”, are:
- Energy Isolation (Lockout, Tagout and Verify, LOTO etc)
- Fall Prevention (working at height, below floor level, falling objects etc)
- Mobile Equipment (free moving vehicles such as forklift trucks, traffic management)
- Overhead Crane Safety (overhead travelling crane, mobile crane, tower crane etc)
- Confined Space Entry (entering tanks, pits etc)
- Molten Metal Safety (preventing explosion)
- Contractor Management (preventing injury during projects and other work to contractors and those providing contracted services)

Total recordable injuries (TRI) per region*

	2018	2017[1)]	2016	2015	2014
Total recordable injuries (TRI) employees	**3.4**	2.9	2.6	3.0	3.4
Employees	3.5	3.1	2.6	3.0	3.2
Contractors	3.0	2.5	2.6	3.1	3.8
TRI Norway	**2.9**	3.9	3.9	3.6	-
Employees	2.3	3.1	3.0	2.8	1.5
Contractors	8.7	7.3	10.0	11.1	15.8
TRI Germany	**5.1**	4.4	3.9	6.6	-
Employees	5.3	4.6	3.5	5.7	7.0
Contractors	3.8	3.2	5.7	12.7	20.8
TRI Brazil	**1.8**	2.0	1.8	1.8	-
Employees	1.5	2.3	1.6	1.6	2.2
Contractors	2.0	1.8	1.9	1.9	2.4
TRI US	**4.7**				
Employees	4.6				
Contractors	7.0				

*) Number of recordable injuries per million working hours. The numbers include discontinued operations.
1) Excluding Extruded Solutions for full year 2017

GRI-reference: GRI Standards 403-9 (2018)

The most dominant types of injuries in 2018 were damages to fingers and hands, representing nearly half of all recorded injuries. Injured legs, knees, ankles and feet represent around 20 percent while arms, elbows, shoulders and wrists represent 10 percent. Damages to face, eyes and head accounted for 15 percent of the recorded injuries. Hydro is not reporting these figures per gender as this can be in conflict with privacy protection considerations.

S5.2 High risk incidents (HRI)

High risk incidents include major accidents and incidents with major potential.

High risk incidents (HRI) rate is calculated as the number of high risk incidents per million hours worked, employees and contractors combined.

High risk incidents (HRI)

	2018	2017	2016	2015	2014
High risk incidents	**202**	127	63	83	96
HRI rate	**2.27**	2.53	1.57	2.07	2.68

GRI-reference: GRI Standards 403-9 (2018)

Read more about the fatality prevention protocols under Note S5.1.

S5.3 Occupational illness rate

Occupational illness rate measures incidents of diseases related to occupation. It is required as a minimum that all potential cases shall be reported. The majority of the reports are from our Norwegian sites, showing that there is room for further improvement in our global reporting. Development is tracked through a corporate reporting tool. Actual occupational illnesses are defined by Hydro as illnesses that

- Have been confirmed by relevant authorities/insurance companies or doctors (depending on the national system)
- Have lead to any kind of permanent disability, disablement pension, loss of function and/or are a listed occupational disease

Occupational illness rate[1)]

	2018	2017	2016	2015	2014
Occupational illness rate[2)]	**0.5**	0.3	0.7	1	1.5

1) Excluding Extruded Solutions.
2) Cases per million working hours. The numbers include discontinued operations. Our reporting processes do not yet ensure complete reporting, specifically outside Norway.

GRI-reference: GRI Standards 403-10 (2018)

Extruded Solutions records occupational illness as part of the total recordable injuries. There where no occupational illness cases in Extruded Solutions in 2018.

Most of the reported cases are related to noise. We use our proactive tool for work environment risk assessment to identify employees at risk of developing occupational illnesses and implement risk reducing measures e.g. substitution of hazardous chemicals, noise reduction, personal protective equipment to avoid development of new occupational illness cases. We have e. g. reduced the frequency of occupational illness cases related to noise and pot room asthma. The tool has also helped identifying occupational illnesses related to e.g. musculoskeletal and vibration disorders.

S5.4 Wellness

Hydro is concerned about the wellness of our employees, and offers a variety of initiatives, that promote good physical and mental health.

The majority of Hydro’s sites have wellness initiatives in place. Some examples of initiatives range from nutrition and weight management, tobacco cessation to managing work-life balance. The different sites offer wellness initiatives that address issues relevant for that site or region.

Note S6 – Labor rights

Reporting principles
The vast majority of operational sites within Primary Metal and Energy have established formal joint management-worker health and safety committees covering all employees. At certain sites, also contractor employees are included.

Hydro's major sites in Europe and Brazil are unionized. Extruded Solutions has a major presence in the USA, and about 60 percent of our US employees are working at a unionized site. In total, we estimate that 86 percent of all employees work at a unionized site. Learn more about dialogue with the employee representatives under Dialogue with affected parties on page 91.

In regions where unions are not allowed we are striving to establish alternative worker-management relations.

No strikes exceeding one week and no lock-outs took place in 2018.

Note S7 – Current income tax

Reporting principles
Current income tax is based on Hydro's financial statements.

Current income tax

NOK Million	**2018**	2017	2016	2015	2014[1)]
Norway	**1,770**	1,715	690	563	565
Germany	**81**	(9)	251	230	432
France	**56**	10	9	11	2
Spain	**26**	8	7	7	13
Slovakia	**46**	55	36	115	67
Sweden	**48**	46	-	-	-
Poland	**32**	22	-	-	-
Luxembourg	**24**	10	9	33	9
Denmark	**22**	28	-	-	-
Austria	**39**	30	-	-	-
Hungary	**38**	(2)	-	-	-
Other	**36**	19	2	7	7
Total EU	**449**	218	315	403	530
Switzerland	**22**	1	-	(15)	14
Other Europe	**-**	-	-	-	-
Total Europe	**2,241**	1,934	1,006	952	1,109
USA	**39**	24	16	14	-
Canada	**73**	150	87	6	113
Brazil	**312**	424	853	396	343
Asia	**52**	39	19	13	15
Other	**7**	4	7	33	25
Total outside Europe	**483**	641	982	462	496
Total	**2,724**	2,575	1,988	1,414	1,605

1) The joint operations Alunorf, Skafså Kraftverk, Tomago and Aluchemie are included in the figures above, but are not included in the other parts of the social or environmental statements, except for certain information in note E8 and S14. Those entities are included in Hydro's financial statements on a line-by-line basis. Please see note 2 to the consolidated financial statements for more information about joint operations.

GRI-reference: GRI Standards 201-4 (2016)

Hydro is subject to income taxes in the countries where we operate. The nominal tax rates typically vary between around 20 and 35 percent. The effective tax rates may differ from the nominal tax rates, among other things as a result of differences in depreciation rates and other tax deductions.

- The marginal tax rate for our power production in Norway is 58.7 percent.
- Qatalum, a 50/50 joint venture with Qatar Petroleum, has been granted a 10 year exemption from income taxes in Qatar, expiring in 2020. Thereafter, Qatalum will pay income tax at the generally applicable income tax rate in Qatar. It is Hydro's position that the generally applicable income tax rate, currently at 10 percent, shall apply to Qatalum after the expiry of the tax holiday.
- The general corporate income tax rate in Brazil is 34 percent. Hydro's bauxite, alumina and aluminium operations in Brazil have been granted income tax incentives encouraging investments in the northern provinces of Brazil, reducing the tax rate on operating income to between 20 and 34 percent. In addition, Hydro's operations in Brazil are subject to a number of significant indirect taxes.
- Hydro is present in some countries with at tax rate below 10 percent. In Switzerland, we have bauxite, alumina and aluminium sales activities, and aluminium sales activities in Singapore, both are taxed at rates of around 10 percent. In addition, Hungary has a tax rate of 9 percent.

Hydro reports according to the Extractive Industries Transparency Initiative and Norwegian legal requirements, see Hydro's Country by country report on page 276. We also report on financial assistance from public organization related to R&D activities, see note S8.

Note S8 – Research & Development (R&D)

Reporting principles
R&D expenses are collected through Hydro's financial reporting, see Hydro's financial statements note 21. R&D funding is gathered from Hydro's corporate technology office and our main R&D centers, located in Årdal (smelter technology) and Sunndal (alloys and casting) in Norway, Bonn in Germany (Rolled Products) and Brazil (Bauxite & Alumina). The R&D centers in Extruded Solutions are in Finspång, Sweden, and Detroit, USA. Funding received are actual income received from public research funds, e.g. The Research Council of Norway (Forskningsrådet) and Enova, through the year. See page 92 (Cooperation with other institutions) for more information.

Research & Development

NOK million	**2018**	2017	2016	2015	2014
Research & Development expenses	**594**	500	370	330	277
Funding received[1)]	**35**	62	46	51	66

1) In addition comes funding to the Karmøy Technology Pilot of NOK 311 million in 2018, NOK 639 million in 2017, NOK 554 million in 2016 and NOK 52 million in 2015. Hydro participates in collaborative projects carried out by other research organizations which receive public funding directly. Such funding is not included in the figures above. GRI-reference GRI Standard 201-4 (2016)

We have been granted funding amounting to approximately NOK 298 million - to be received in the years to come - provided that certain research projects are carried out. Some funds might already have been received. In addition, Enova granted NOK 1.6 billion to the Karmøy Technology Pilot in 2014, across several years, see page 101.

Note S9 – Community investments, charitable donations and sponsorships

Reporting principles
All sites, except Extruded Solutions, report annually on all community investments, charitable donations, sponsorship and other related initiatives. The reporting includes monetary amounts and time spent and benefits to the company as well as to the communities. Outcomes for Hydro and the society are also included in the reporting requirements.

Community investments

NOK million	**2018**	2017	2016	2015	2014
Community investments[1)]	**29**	23	19	13	11
Total community investments, charitable donations and sponsorships[1)]	**89**	36	28	30	24

1) Excluding Extruded Solutions.

The increase in 2018 includes NOK 35 million related to emergency relief following the extreme rainfall and subsequent flooding in Barcarena in 2018. It also includes around NOK 10 million to foodcards as part of the TAC agreement. See the section “The Alunorte situation” in this report.

Extruded Solutions has a magnitude of community investments at its sites. The nature of such projects varies with local customs and business needs. We do no currently have consolidated information about these.

Note S10 – Compliance

Reporting principles
Compliance data have mainly been collected from Internal Audit Corporate’s overview of alerts reported to line management, to supporting staff functions, and Hydro's AlertLine. In addition, compliance data has been obtained from quarterly compliance reporting by business areas, and a self-assessment filled in by each business area at year-end. Some information has also been collected through other sources including Hydro's Legal department and Procurement Network.

S10.1 Reported and confirmed cases of non-compliance

Non-compliance cases are normally reported to line management and/or supporting staff functions including Compliance, Internal Audit, HR, Legal, HSE, Finance and Accounting. Non-compliances can also be reported through Hydro's AlertLine, which offers the possibility of anonymous reporting, unless otherwise prohibited by local law. Although separate reporting statistics have been kept for Extruded Solutions and the rest of Hydro, the figures for 2018 are consolidated.

The number of dismissals due to breach of Hydro policy is limited to cases reported to Hydro's Internal Audit.

In June 2018, Hydro was informed that an employee at a site in the EU allegedly had accepted a bribe from a supplier. The allegation was confirmed by Hydro's Internal Audit in August 2018. The bribe was offered by a supplier, and all active purchase orders with this supplier were cancelled. The case was reported to the police, and the employee was terminated with immediate effect.

We constantly strive to improve our work to identify and mitigate human rights impacts. The latest human rights mapping was done by the Danish Institute on Human Rights (DIHR) in 2017, covering all countries in which Hydro operates (excluding Extruded Solutions). Children's rights related to Hydro's operations in Brazil have been addressed by the Global Child Forum's report "Norsk Hydro Brazil's journey towards social responsibility" published in 2018. The study "Companies in Fragile Contexts: Redefining Social Investment." by Africa Centre for Dispute Settlement, published in 2017, addresses how Hydro can work with human rights impact in fragile contexts.

To gain even more qualified information, we are planning a full human rights due diligence for the Alunorte refinery and the Paragominas mine in Pará, Brazil, in 2019.

An example of how we work with alleged human rights breaches is from our supply chain. We have been in dialog with a metal supplier, based on alleged human rights breaches, to perform CSR and HSE audits throughout their value chain. As we have been denied access to certain parts, we will terminate the contract, unless the supplier alters the decision.

Cases reported regarding breaches of Hydro policy

	2018	2017[3]	2016	2015	2014[2]
Number of cases reported through AlertLine (or similar)	**342**				
Hydro, excluding Extruded Solutions		123	173	83	60
Extruded Solutions		179			
Dismissals due to breaches of Hydro policy[1]	**14**				
Hydro, excluding Extruded Solutions		4	5	23	
Extruded Solutions		2			
Alleged cases of harassment	**116**				
Alleged cases of discrimination	**11**				
Alleged cases of discrimination and/or harassment					
Hydro, excluding Extruded Solutions		40	45	3	
Extruded Solutions		44			
Confirmed cases of harassment	**50**				
Confirmed cases of discrimination	**1**				
Confirmed cases of discrimination and/or harassment					
Hydro, excluding Extruded Solutions		16	9	1	
Extruded Solutions		11			
Alleged cases of corruption, fraud, corruption and/or conflict of interest	**25**				
Hydro, excluding Extruded Solutions		32[4]	21	19	
Extruded Solutions		10			
Confirmed cases of corruption	**1**				
Confirmed cases of fraud	**-**				
Confirmed cases of conflict of interest	**3**				
Hydro, excluding Extruded Solutions		11	1	5	
Extruded Solutions		3			

1) Total number of dismissals due to breaches of Hydro policy and handled by Hydro's Internal Audit
2) Detailed figures not available for 2014
3) Figures for Extruded Solutions include all of 2017, not only the months after acquisition
4) 2017 figure included cases of non-compliance

GRI-reference: GRI Standards GRI 406-1 (2016) and 205-3 (2016)

S10.2 Legal claims

The legal claims stated below are cases related to Brazil, and goes beyond what is covered by Hydro's "Legal letter". For more information about other legal proceedings in Hydro, including the case related to Sapa Profiles Inc., a Portland, Oregon based subsidiary to Hydro Extruded Solutions AS, please see the section Legal proceedings on page 128.

Cases related to the Alunorte situation

February 28, 2018: The State Public Prosecutor's Office filed in the State Criminal Court of Bacarena, State of Para, Brazil, a criminal lawsuit against Alunorte alleging a leakage/overflow of the bauxite residue deposits to the external environment and environmental damage. An injunction was granted and the court determined the prohibition on the use of DSR2 and the reduction of the production to 50 percent. The case has been referred to the Federal Court which has maintained the injunction pending further decision.

March 03, 2018: the trade unions of workers in the chemical industries of Barcarena, State of Para, requested an injunction to avoid Alunorte to conduct any dismissals of employees without negotiating with the union. The Labour Court of the district of Abaetetuba, State of Para, granted such injunction but the decision was overturned by the Court of Appeal. In respect of the merits of the case, on February 28th, 2019 the Court of Abaetetuba maintained its previous decision. However, the Court of Appeal decided to suspend this decision, pending appeal process.

March 16, 2018: CAINQUIAMA – Associação dos Cablocos, Indigenas e Quilombolas da Amazônia (an association of local communities from Barcarena) filed a lawsuit in the State Court in Belém against Norsk Hydro Brasil, Alunorte and the State of Pará, claiming that chemical waste was intentionally discharged and that the bauxite residue deposits were in operation subject to fraudulent license granted by the State of Pará. Furthermore, the plaintiff alleges that the bauxite residue deposits (DRS 1 and 2) are located on an ecological reserve area. With reference to these allegations the plaintiff requested the defendants to carry out medical examinations of allegedly impacted communities. *On March 22, 2018*, the judge partially granted the injunction, and determined that the companies cover the cost of health tests on people allegedly affected by the claimed pollution.

March 27, 2018: A collective lawsuit was filed by IBS (Barcarena's Social and Environmental Institute) against Norsk Hydro Brazil, Albras, Alunorte, Imerys, Alubar, the Municipality of Barcarena and the State of Pará to seek remediation of the environment and compensation for material and moral damages. *On August 02, 2018*, the lawsuit was referred to the Federal Court.

April 3, 2018: The State of Pará filed a civil class action seeking to recover environmental damages allegedly caused by Alunorte, as well as indemnification for alleged material and moral damages. *On April 9, 2018*, the Court ordered Alunorte to present a guarantee BRL 150 million. On *December 12, 2018*, Alunorte and the State of Pará entered into a settlement agreement to end the lawsuit with reference to the TAC and TC signed on September 5th. In addition, Alunorte agreed to cover the public expenses related to inspections carried out following the heavy rain in February 2018. The settlement is pending confirmation by the Court.

April 5, 2018: The State and Federal Public Prosecutor's Offices (Ministerio Público) filed a lawsuit against Alunorte, Norsk Hydro Brasil and the State of Pará. As a preliminary injunction, the plaintiffs requested partial suspension of Alunorte's activities (50 percent reduction) and prohibition of using the bauxite residue deposit DRS2 until the license to operate is obtained, and the company can demonstrate operational stability and efficiency. *On April 30, 2018*, the Federal Court partially granted the injunction, determining a similar embargo previously granted by a State Criminal Court. The State of Pará and the State Public Prosecutor's Office was excluded from the lawsuit.

May 15, 2018: A new lawsuit was filed by CAINQUIAMA against Mineração Paragominas (Paragominas), Albras, Norsk Hydro Brasil, Alunorte, INMETRO (National Institute of Metrology), BVQI -CERTIFICADORA LTDA; Federal Union of Brasil, National Department of Mineral Production ("DNPM"), in the Federal Court in Paragominas, alleging that Paragominas' tailings contain hazardous substances. CAINQUIAMA also claims that the bauxite residue has been illegally dumped in Alunorte's bauxite residue deposits (DRS1 and DRS2) and that these deposits are located in an ecological reserve area requesting an injunction to stop the operation of Paragominas. *On July 18, 2018* the Court denied the request for injunction. On *October 23, 2018*, the case was referred to the Federal Court in Belém pending further decisions.

September 12, 2018: ADECAM (Association of Education, Culture, Protection and Defense of Consumers, Taxpayers and Environment of Brazil) filed a lawsuit in the Federal Court in Belém against Alunorte, Norsk Hydro Brasil, the Federal Union and Ibama (the Federal Environmental Agency) seeking compensation for alleged collective moral damages to the people of Pará, having the rainfall in February 2018 as the main ground for the claim. The association accuses the companies of pollution, including overflow and leakage of the bauxite residue deposits, discharge of contaminated effluents through disused pipes, in addition to what has already been claimed in other lawsuits involving the February events. By the publication of this report, neither Alunorte nor Norsk Hydro Brasil have been summoned.

October 31, 2018: CAINQUIAMA filed a similar lawsuit as the one filed in March 16th against Mineração Paragominas, Albras, Norsk Hydro Brasil, Alunorte, State of Pará, BVQI - Certificadora Ltda in the State Court of Belem, requesting the suspension of the operation of the companies.

Other cases

From 2008 there is a legal dispute between five of the 120 relocated families and the alumina refinery project CAP in Barcarena in Brazil. Their requests have been denied by the Court. The case is still waiting for decision of the Court of Appeals.

Following an overflow of storm water from the bauxite residue deposits at Alunorte in 2009, there are still legal issues pending. In 2012, more than 5,300 claims related to the overflow were filed in the local court. By the end of 2018, a total of 3,710 cases have been decided by the first level civil court in Barcarena, Pará, all in Alunorte's favor. 3,321 of these decisions have been appealed to the second level civil court, located in Belem, Pará, which rendered decisions in 2,702 appeal cases, all in favor of Alunorte. The Court upheld the first instance decisions on the basis that there is no evidence that the plaintiffs suffer or have suffered from the alleged damages related to the spillage of bauxite residue contaminated water. As of 31 December 2018, 1,162 plaintiffs have filed appeals to the Superior Court of Justice, and there has been rendered a decision in 42 cases, all in favor of Alunorte.

A civil class action was filed by the Municipality of Ulianópolis against Albras and Alunorte and several other companies in September 2011 to seek remediation of environment damage and the condemnation of the companies in collective moral damages, considering their alleged contribution to environmental damages related to previous disposal of waste through Companhia Brasileira de Bauxita (CBB). Albras and Alunorte are parties in the class action, as both delivered waste to CBB prior to 2003. The class action was filed after an attempt from the Municipality of Ulianópolis together with the State Environmental Agency - Semas, to negotiate a settlement with all the companies involved. Albras and Alunorte did not agree to the terms of the proposed settlement as they had already removed their waste from the site.

The Federal and State Public Prosecutors, in a joint initiative, filed a Public Class Action against Albras, Alunorte, Imerys, Votorantim, Oxbow, Yara (companies located in the industrial district of Barcarena) and the Municipality of Barcarena, the State of Pará and the Federal Union (Brazilian Government). The purpose of the lawsuit is to protect the rights of the local people of Barcarena that allegedly consume contaminated water due to the industrial activities carried on the municipality

In 2017, Cainquiama, an association of Cablocos, indigenous people to the Amazon, filed a lawsuit against Norsk Hydro Brasil, Alunorte and Albras, the State of Pará, Bureau Veritas Brasil and Inmetro. They claim part of the bauxite residue deposits for Alunorte (DRS1 and DRS2) was established on an area designated as an ecological reserve, and that they have suffered social and environmental damages. The area was never formally created as an ecological reserve, and Hydro has the necessary environmental licenses. The area is now classified as an industrial zone.

S10.3 Relocation of people

Relocation of people may at times be necessary in connection with our operations. No voluntary or involuntary relocation of people with legal or prescriptive rights to their dwellings, took place in Hydro's operations in 2018. In Barcarena in Pará, Brazil, in an area surrounding Hydro’s operations and regulated for industrial purposes, illegal logging and settlements have accelerated since 2016. Neither the authorities nor Hydro want settlement in the area.

S10.4 Compliance training

In 2018, a total of 3,490 employees in Hydro participated in training to raise awareness of anticorruption. 2,054 participants completed e-learning courses and 1,436 employees participated in classroom training.

Furthermore, a total of 838 employees participated in training on competition law compliance. 201 employees completed Hydro's e-learning course "Preventing Anti-Competitive Practice" as well as 637 employees who participated in classroom training. In addition, 130 employees participated in classroom training in CSR and human rights.

S10.5 Screening of business partners and supplier audits

As part of the integrity risk management process, approximately 13.000 of Hydro's potential or existing counter-parties were screened for human rights violations, corruption, money-laundering, politically exposed persons and violations relating to sanctions using the RDC integrity risk tool. This mostly relates to suppliers, but also some customers, agents and other business partners were included. New business partners related to most Norwegian and Brazilian operations are screened before registered in our ERP system.

All suppliers, customers and other business partners registered in our main accounting systems are screened on a weekly basis against recognized international sanction lists.

In total 83 supplier audits were conducted in 2018 in Hydro, excluding Extruded Solutions, of which 79 included HSE and CSR related topics Around three quarters of the audits led to action plans, and by the end 2018, around half of the corrective actions proposed by Hydro were responded to.

Key CSR and HSE findings from the audits were related to lack of management systems, environmental awareness, compliance controls and emergency preparedness.

In Extruded Solutions, 262 supplier audits were performed during 2018.

Hydro has also further developed the cooperation with FIEPA (Pará Federation of employers) and REDES (a supplier development network developed by the Industry Federation of Pará), both in Brazil. Together we have organized training for more than 50 local suppliers in 2017 and 2018 and strengthened their competence on HSE, management systems, quality and labor rights. About 3000 employees have been reached so far.

In 2018, we launched the strategic target to contribute to quality education skills development for 500,000 people in our communities and for business partners by the end of 2030.

S10.6 Cyber security training

Awareness building in cyber security has been the priority for 2018. The activities conducted are related to data protection, including GDPR, and cyber exercise related to email phishing. We continue to harmonize and integrate security services between Extruded Solutions and the other business areas in Hydro.

In addition, all new employees have to complete a course in cyber security in Hydro Academy.

Note S11 - Spending on local suppliers

Reporting principles
Selection of local partners and suppliers/contractors shall be based on competitive bidding to the extent feasible, and in compliance with competition laws and regulations as well as Hydro's requirements. A local supplier is here defined as a supplier situated in the same country as the operational site.

Data on local purchasing is gathered by the business areas Bauxite & Alumina, Primary Metal, Energy and Rolled Products, in addition to Hydro's project organization, and covers consolidated activities. Extruded Solutions' business model and regional operations differ from the other business areas, in size and nature. An Extruded Solutions site is normally smaller in size and located in an industrial area, with a group of similar size businesses and plays a part in a regional network. Normally most non-metal spend is sourced from local suppliers. As Extruded Solutions comprises of more than 100 sites in 40 different countries and the situation varies by site and by region and there is no typical figure for the business area.
For the business areas Bauxite & Alumina, Primary Metal, Rolled Products and Hydro's project organization, Brazil, Norway and Germany are considered the most significant locations of operation based on economic importance.

Spending on local suppliers vary from site to site depending on which goods and services are available. Local spend in our Brazilian Bauxite & Alumina operations was estimated to be 70 percent in 2018. About 45 percent of total spend within Rolled Products (mainly operations in Germany and Norway), was spent within Germany and Norway. Most of the raw materials used at the aluminium plants in Norway are imported, while electricity and services are sourced locally. In the Norwegian smelters local procurement mainly relates to maintenance services etc. and is above 50 percent. Hydro's Projects' procurement organization carries out major projects mainly in Brazil and Norway (upgrade and restart of Husnes, line B, and upgrade of the mixing line at Sunndal). Local spend in projects carried out in Brazil and the portion of local spend related to hydro power and primary metal projects in Norway is very high. Across the different projects, local spend by Hydro's project organization was 80 percent of total spend in 2018, the same level as for 2017.

Note S12 – Public affairs and lobbying

Reporting principles
Data on public affairs and lobbying is gathered from Hydro's Communication & Public Affairs department in Norway, EU, Germany and Brazil and covers consolidated activities. We are currently mapping the extent of public affairs and lobbying in Extruded Solutions.

In total nine full-time equivalents (FTE) are dedicated to public affairs and lobbying, unchanged from 2017. This includes three FTEs each in Brazil and in the EU (Brussels office). In Norway two FTEs are dedicated to public affairs and lobbying, and one FTE in Germany. In 2018, we spent in total NOK 6 million excluding salaries and office costs on public affairs and lobbying. Within the EU, lobbying activities are publicly reported through the EU Transparency Register. To get a full overview of all Hydro's memberships in different industry associations see Hydro.com.

According to our global directives, Hydro may not make financial contributions to political parties. We have no indications that such contributions took place in 2018.

Note S13 – Certifications

Reporting principles
According to Hydro's policy, all operational sites shall comply with, but not necessarily be certified according to, ISO 9001 and ISO 14001 and - within 2020 - with OHSAS 18001. Certification according to these standards is a decentralized responsibility based on identified business needs.

Hydro's power plants in Norway have chosen not to be certified. However, they are fulfilling the requirements given in the mentioned standards. In addition, the power plants need to comply with the requirements given by the Norwegian Water Resource and Energy Directorate (NVE), i.e. concessions for operations as well as environmental, third person safety, security and emergency preparedness regulations. The table below shows the distribution of certification of the other operational sites in Hydro.

In addition to the mentioned ISO and OSHAS standards below, a number of sites are also certified according to different sector and customer specific standards. Examples of such certifications are the IATF 16949 for the automotive industry, and the Aluminium Stewardship Initiative.

Share of relevant operational sites certified	ISO 9001	ISO 14001	OHSAS 18001
Hydro	99%	96%	74%

Of our sites delivering to the automotive industry, 81 percent is certified according to the IATF 16949. Hydro’s most energy intensive sites and operations comply with the ISO 50001 Energy Management systems.

Note S14 – Social data for 50/50-owned companies

Reporting principles
Hydro has an ownership share of 50 percent in Alunorf and Qatalum. As only operations owned more than 50 percent are included in most of the information in Hydro's viability performance statements, we have chosen to disclose certain social information about these partly-owned companies and their total performance. The reporting principles of each indicator might differ from the ones used by Hydro and in-between the companies. For information about environmental data, see Note E8 to the environmental statements.

Social data for 50/50-owned companies

	Main product	Number of employees	Share of women	TRI, employees	TRI, contractors	LTI, employees	LTI, contractors	Fatal accidents
Alunorf	Rolled products	2,273	4.4 %	3.0	NA	-	NA	-
Qatalum	Primary aluminium	1,137	3.6 %	0.7	0.7	0.3	0.7	-

Partnerships and commitments

GRI Standards

Hydro uses the GRI Standards for voluntary reporting of sustainable development. The guidelines comprise economic, environmental and social dimensions relating to an enterprise's activities, products and services. GRI collaborates with the United Nations Environment Programme and UN Global Compact. Hydro has reported according to GRI since 2003.

We believe that our reporting practice is consistent with GRI's reporting principles in all material respects. We report in adherence to "Core" as defined by the GRI Standard 101: Foundation 2016, and include the GRI G4 Mining & Metals sector supplement and certain relevant aspects of the G4 Electric Utilities sector supplement in our reporting.

The report is externally assured by KPMG. The external assurance, as outlined in the Independent Auditor's Assurance report, concludes that the report is presented, in all material respects in accordance with the GRI Standards, see page 269.

The GRI index, including the full definition of each indicator and references to specific sections in this report as well as additional information, can be found on www.hydro.com/gri

UN Global Compact Communication on progress

We support the principles of the UN Global Compact. Human rights, international labor standards, working against corruption and environmental considerations are fundamental to our approach to corporate responsibility.

Hydro has played an active role in the Global Compact since its formation. Our commitment is expressed by the President & CEO in his letter to shareholders on page 8 of this report. Our Communication on progress (COP) in relation to the Compact's 10 principles is at the Advanced level and thus also reflects the Global Compact's 21 advanced criteria. The consistency of the information in Hydro's Viability Performance reporting 2018 with the information in the Hydro Communication on Progress 2018 has been reconciled by our auditors, see page 269. A complete report can be found at www.hydro.com/globalcompact

UN Sustainable Development Goals

The UN Sustainable Development Goals (SDGs) embrace a universal approach to the sustainable development agenda. They explicitly call on business to use creativity and innovation to address development challenges and recognize the need for governments to encourage sustainability reporting. Hydro has an impact on all of the 17 development goals, but some more than others. Of the 17, Hydro has chosen eight goals that are the most important to us, that are highlighted throughout the report.

Hydro uses the SDG Compass, a tool built in a partnership between GRI, UN Global Compact and the World Business Council on Sustainable Development, to make a high-level review on how we relate to the UN Sustainability Development Goals. This review is included in the GRI index 2018 and is also included in external auditor's consistency check of Hydro's GRI index 2018.

A more complete overview of Hydro's positive and negative impacts on each of the 17 SDGs, can be found at www.hydro.com

UN Guiding Principles on Business and Human Rights

The United Nations (UN) Guiding Principles on Business and Human Rights (hereafter Guiding Principles) were endorsed by the UN Human Rights Council in June 2011. They have provided a clear, global understanding of governmental duties and corporate responsibilities for human rights. The Guiding Principles articulate that wherever and however a company operates, it must refrain from violating human rights. Companies are expected to be fully aware of their human rights impacts, take concrete steps to address them and implement measures to mitigate negative impacts in the future.

Hydro uses the GRI document "Linking G4 and the UN Guiding Principles" document as basis for how we report on our adherence with the guiding principles, and report on this in the GRI index 2018. This is also included in external auditor's consistency check of Hydro's GRI index 2018. The most salient human rights issues are defined through our materiality analysis on page 79 in this report and include:

- Diversity and equal opportunity
- Human and workers' rights
- Occupational health and safety
- Supply chain management (including child and forced labor)

Hydro has nothing to report for 2018 on the guiding principle B4 "Additional severe impacts".

ICMM

Hydro is a member of the International Council on Mining and Metals and reports according to the ICMM requirements. That includes Hydro's reporting in accordance with the GRI Standards, see the section about GRI above. The Viability Performance 2018 reporting is prepared in line with the requirements found in the ICMM 10 principles and position statements. The complete Viability Performance 2018 reporting is – according to the ICMM requirements – assured by our external auditor, please see page 269.

ASI

Hydro is an active member of the Aluminium Stewardship Initiative (ASI). ASI's mission is to recognize and collaboratively foster the responsible production, sourcing and stewardship of aluminium. We have been involved at all stages in the multi-stakeholder development of ASI standards to date. We have participated in developing ASI's certification program. The third party certification platform was launched in December 2017. Our first site, the extrusion plant Hoogezand in the Netherlands, was certified according to the ASI Performance Standard in 2018. Hydro's first rolling mill was certified in the first quarter 2019, and several other plants, representing the complete value chain, are under certification.

Hydro reports in the GRI index 2018 on how we relate to ASI's 11 principles and underlying criteria. This is also included in external auditor's consistency check of Hydro's GRI index 2018. For the full GRI index, see www.hydro.com/gri

TCFD - Task Force on Climate-related Financial Disclosures

Hydro is a signatory to the TCFD recommendations. TCFD was formed by the Financial Stability Board in 2015. The recommendations were made public in June 2017. The process of updating Hydro's current climate strategy that runs through 2020, has started. Scenario analyses will be an important platform for the new climate strategy. These include

- *New policies:* similar to a 2°C scenario in line with the Paris agreement
- *Current policies:* similar to a 4°C scenario and in line with already adopted measures
- *Physical risks:* stress testing of physical risks under a 6°C scenario

The table below shows an overview of Hydro's initial approach to the recommendations. All page references relate to Hydro's Annual Report 2018.

TCFD recommendations

Recommendation	Disclosure	Reference
Governance: Disclose the organization's governance around climate-related risks and opportunities		
a) Describe the board's oversight of climate-related risks and opportunities	Board developments Risk review Key developments and strategic direction / Creating value by becoming Better, Bigger and Greener	31 120 13
Strategy: Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material		
a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	Risk review Energy and climate change	21-22, 121-122, 125-126 80-82
b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	Risk review Energy and climate change	21-22, 127] 80-82
c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	In 2018, Hydro concluded a review of its climate-related risks, including physical, technological, commercial, legal and reputational risk. The review forms the basis for scenario analyses and an update of the climate strategy.	80
Risk management: Disclose how the organization identifies, assesses, and manages climate-related risks		
a) Describe the organization's processes for identifying and assessing climate-related risks	Energy and climate change	80-82
b) Describe the organization's processes for managing climate-related risks	Environment Energy and climate change	26 80-82
c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organizations' overall risk management	Business planning and risk management	136
Metric and targets: Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material		
a) Disclose the metrics used by the organization to assess climaterelated risks and opportunities in line with its strategy and risk management process	Board of Directors' report: Environment Hydro's materiality analysis 2017 Environmental statements Note E1 to the environmental statements: Greenhouse gas emissions Note E3 to the environmental statements: Energy Note E4.2 to the environmental statements: Water Note E4.3 to the environmental statements: Recycling Note E6.2 to the environmental statements: Land use and rehabilitation	26 79 231 232-237 239-240 240- 241 244
b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks	Environmental statements Note E1 to the environmental statements	231 232-237
c) Describe the targets used by the organization to manage climaterelated risks and opportunities and performance against targets	Board of Directors' report Energy and climate change Resource management	12 81 84

Independent auditor's assurance report

We have been engaged by the Corporate Management Board of Norsk Hydro ASA ('Hydro') to provide limited assurance in respect of the Viability performance and Viability performance statements section in the Annual Report 2018 (hereafter Viability performance 2018) of Hydro. The scope excludes future events or the achievability of the objectives, targets and expectations of Hydro and information contained in webpages referred to in the Viability performance 2018 unless specified in this report.

Our conclusion
Our conclusion has been formed on the basis of, and is subject to, the matters outlined in this report.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusions.

Based on the limited assurance procedures performed and the evidence obtained, as described below, nothing has come to our attention, to indicate that the Viability performance 2018 is not presented, in all material respects, in accordance with the GRI Standards; Core option and the applied reporting criteria as disclosed in the About the reporting section on page 230.

The Corporate Management Board's responsibility
The Corporate Management Board is responsible for the preparation and presentation of the Viability performance 2018 in accordance with the GRI Standards; Core option and the reporting criteria as described in the About the reporting section on page 230 in Hydro's Annual Report. It is important to view the information in the Viability performance 2018 in the context of these criteria.

These responsibilities include establishing such internal controls as management determines are necessary to enable the preparation of the information in the Viability performance 2018 that are free from material misstatement, whether due to fraud or error.

Our responsibility
Our responsibility is to provide a limited assurance conclusion on Hydro's preparation and presentation of the Viability performance 2018.

We conducted our engagement in accordance with the International Standard for Assurance Engagements (ISAE 3000): "Assurance Engagements other than Audits or Reviews of Historical Financial Information", issued by the International Auditing and Assurance Standards Board.

ISAE 3000 requires that we plan and perform the engagement to obtain limited assurance about whether the information in the 'Viability performance 2018' is free from material misstatement.

The firm applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

Limited assurance of the Viability performance 2018
The procedures selected depend on our understanding of the Viability performance and other engagement circumstances, and our consideration of areas where material misstatements are likely to arise. Our procedures for limited assurance on the Viability performance 2018 included:

- A risk analysis, including a media search, to identify relevant sustainability issues for Hydro in the reporting period;
- Interviews with senior management and relevant staff at corporate and selected sites concerning sustainability strategy and policies for material issues, and the implementation of these across the business;
- Enquiries to management to gain an understanding of Hydro's processes for determining material issues for Hydro's key stakeholder groups;
- Interviews with relevant staff at corporate level responsible for providing the information, carrying out internal control procedures and consolidating the data in the Viability performance 2018;

- Visits to three production sites to review the source data and the design and implementation of controls and validation procedures at local level;
- Reviewing relevant internal and external documentation, on a limited test basis, in order to determine the reliability of the Viability performance 2018;
- Reading the Viability performance 2018 to determine whether there are any material misstatements of fact or material inconsistencies based on our understanding obtained through our assurance engagement.
- Assessment of Hydro's reporting in relation to Subject Matters 1 to 4 as set out in ICMM Sustainable Development Framework: Assurance Procedure;
- Assessment of Hydro's self-declared commitment to the Aluminium Stewardship Initiative's 11 principles and underlying criteria;
- Determination of the consistency of the sustainability information in the Hydro Communication on Progress 2018 with the information in the Viability performance 2018.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement, and consequently the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained has a reasonable assurance engagement been performed.

Purpose of our report
In accordance with the terms of our engagement, this assurance report has been prepared for Norsk Hydro ASA for the purpose of assisting the Corporate Management Board in determining whether Hydro's limited assurance sustainability information is prepared and presented in accordance with the GRI Standards; Core option and for no other purpose or in any other context.

Oslo, 12 March 2019
KPMG AS

Julie Berg
State Authorized Public Accountant

Anette Rønnov
Director

Appendices to the Board of Directors' report

272 Alternative Performance Measures (APMs)
276 Country by country report
291 Norwegian code of practice for corporate governance
297 UK Modern Slavery Act transparency statement

Quick overview

This section contains information that is part of the Board of Directors' formal responsibility and exceeding the information required directly in the Board of Directors' report.

All documents are approved by the Board of Directors and included in their signatures to the Board of Directors' Report.

The Country by Country report is also included in the Board of Directors' responsibility statement on page F86 as required by the Norwegian Accounting Act §3-3d and the Norwegian Securities Act §5-5a.

Alternative Performance Measures (APMs)

Alternative performance measures, i.e. financial performance measures not within the applicable financial reporting framework, are used by Hydro to provide supplemental information, by excluding items that, in Hydro's view, does not give an indication of the periodic operating results or cash flows of Hydro. Financial APMs are intended to enhance comparability of the results and cash flows from period to period, and it is Hydro's experience that these are frequently used by analysts, investors and other parties. Management also uses these measures internally to drive performance in terms of long-term target setting and as basis for performance related pay. These measures are adjusted IFRS measures defined, calculated and used in a consistent and transparent manner over the years and across the company where relevant. Operational measures such as, but not limited to, volumes, prices per mt, production costs and improvement programs are not defined as financial APMs. To provide a better understanding of the company's underlying financial performance for the relevant period, Hydro focuses on underlying EBIT in the discussions on periodic *underlying* financial and operating results and liquidity from the business areas and the group, while effects excluded from underlying EBIT and net income (loss) are discussed separately in the section on reported EBIT and net income. Financial APMs should not be considered as a substitute for measures of performance in accordance with the IFRS. Disclosures of APMs are subject to established internal control procedures.

Hydro's financial APMs

- *EBIT:* Earnings before financial items and tax.
- *Underlying EBIT:* EBIT +/- identified items to be excluded from underlying EBIT as described below.
- *EBITDA:* EBIT + depreciation, amortization and impairments, net of investment grants.
- *Underlying EBITDA:* EBITDA +/- identified items to be excluded from underlying EBIT as described below + impairments.
- *Underlying net income (loss):* Net income (loss) +/- items to be excluded from underlying income (loss) as described below.
- *Underlying earnings per share:* Underlying net income (loss) attributable to Hydro shareholders divided by a weighted average of outstanding shares (ref.: note 38 to the consolidated financial statements).
- *Investments:* Additions to property, plant and equipment (capital expenditures) plus long-term securities, intangible assets, long-term advances and investments in equity accounted investments, including amounts recognized in business combinations.
- *Adjusted net cash (debt):* Short- and long-term interest-bearing debt adjusted for Hydro's liquidity positions, and for liquidity positions regarded unavailable for servicing debt, pension obligation and other obligations which are considered debt-like in nature.
- *Adjusted net cash (debt) to equity ratio:* Adjusted net cash (debt)/total equity.
- *Funds from operations to adjusted net cash (debt) ratio:* Cash generation from Hydro's wholly and partly owned operating assets before changes in net operating capital, including the contribution from equity accounted investments, and after current tax expense/adjusted net cash (debt).
- *(Underlying) RoaCE:* (Underlying) RoACE is defined as (underlying) "Earnings after tax" divided by average "Capital employed". (Underlying) "Earnings after tax" is defined as (underlying) "Earnings before financial items and tax" less "Adjusted income tax expense". Since RoaCE represents the return to the capital providers before dividend and interest payments, adjusted income tax expense excludes the tax effects of items reported as "Finance income (expense), net" and in addition, for underlying figures, the tax effect of items excluded. "Capital employed" is defined as "Shareholders' Equity", including non-controlling interest plus long-term and short-term interest-bearing debt less "Cash and cash equivalents" and "Short-term investments". Capital Employed can be derived by deducting "Cash and cash equivalents", "Short-term investments" and "Short-term and long-term interest free liabilities" (including deferred tax liabilities) from "Total assets". The two different approcahes yield the same value.

Items excluded from underlying EBIT, EBITDA, net income (loss) and earnings per share

Hydro has defined two categories of items which are excluded from underlying results in all business areas, equity accounted investments and at group level. One category is the timing effects, which are unrealized changes to the market value of certain derivatives and the metal effect in Rolled Products. When realized, effects of changes in the market values since the inception are included in underlying EBIT. Changes in the market value of the trading portfolio are included in underlying results. The other category includes material items which are not regarded as part of underlying business performance for the period, such as major rationalization charges and closure costs, major impairments of property, plant and equipment, effects of disposals of businesses and operating assets, as well as other major effects of a special nature. Materiality is defined as items with a value above NOK 20 million. All items excluded from underlying results are reflecting a reversal of transactions recognized in the financial statements for the current period, except for the metal effect. Part-owned entities have implemented similar adjustments.

- *Unrealized derivative effects on LME related contracts* include unrealized gains and losses on contracts measured at market value, which are used for operational hedging purposes related to fixed-price customer and supplier contracts, where hedge accounting is not applied. Also includes elimination of changes in fair value of certain internal physical aluminium contracts.
- *Unrealized derivative effects on power and raw material contracts* include unrealized gains and losses on embedded derivatives in raw material and power contracts for Hydro's own use and for financial power contracts used for hedging purposes, as well as elimination of changes in fair value of embedded derivatives within certain internal power contracts.
- *Metal effect in Rolled Products* is an effect of timing differences resulting from inventory adjustments due to changing aluminium prices during the production, sales and logistics process, lasting two to three months. As a result, margins are impacted by timing differences resulting from the FIFO inventory valuation method (first in, first out), due to changing aluminium prices during the process. The effect of inventory write-downs is included. Decreasing aluminium prices in Euro results in a negative metal effect on margins, while increasing prices have a positive effect.
- *Significant rationalization charges and closure costs* include costs related to specifically defined major projects, and not considered to reflect periodic performance in the individual plants or operations. Such costs involve termination benefits, dismantling of installations and buildings, clean-up activities that exceed legal liabilities, etc. Costs related to regular and continuous improvement initiatives are included in underlying results.
- *Impairment charges (PP&E and equity accounted investments)* relate to significant write-downs of assets or groups of assets to estimated recoverable amounts in the event of an identified loss in value. Gains from reversal of impairment charges are simultaneously excluded from underlying results.
- *Alunorte agreements – provision* refers to the provision recognized in relation to the TAC and TC agreements with the Government of Parà and Ministèrio Pùblico made on September 5, 2018.
- *(Gains) losses on divestments* include a net gain or loss on divested businesses and/or individual major assets.
- *Other effects* include insurance proceeds covering asset damage, legal settlements, etc. Insurance proceeds covering lost income are included in underlying results.
- *Pension* includes recognition of pension plan amendments and related curtailments and settlements.
- *Transaction related effects (Sapa)* reflect the net measurement gain relating to previously owned shares in Sapa and an inventory valuation expense related to the Sapa transaction.
- *Items excluded in equity accounted investments* reflects Hydro's share of items excluded from underlying net income in Sapa, until end of third quarter 2017, and Qatalum and are based on Hydro's definitions, including both timing effects and material items not regarded as part of underlying business performance for the period.
- *Net foreign exchange (gain) loss:* Realized and unrealized gains and losses on foreign currency denominated accounts receivable and payable, funding and deposits, embedded currency derivatives in certain power contracts and forward currency contracts purchasing and selling currencies that hedge net future cash flows from operations, sales contracts and operating capital.
- *Calculated income tax effect:* In order to present underlying net income on a basis comparable with our underlying operating performance, the underlying income taxes are adjusted for the expected taxable effects on items excluded from underlying income before tax.
- *Other adjustments to net income* include other major financial and tax related effects not regarded as part of the underlying business performance of the period.

Items excluded from underlying EBIT[1] NOK million	**Year 2018**	Year 2017
Alunorte agreements - provision[2]	**519**	-
Bauxite & Alumina	**519**	-
Unrealized derivative effects on LME related contracts	**(143)**	101
Unrealized derivative effects on power contracts	**(218)**	50
Significant rationalization charges and closure costs	**-**	181
Primary Metal	**(361)**	331
Unrealized derivative effects on LME related contracts	**(200)**	58
Metal Markets	**(200)**	58
Unrealized derivative effects on LME related contracts	**111**	41
Metal effect	**(73)**	(419)
Significant rationalization charges and closure costs	**39**	-
Other effects[3]	**-**	245
Rolled Products	**77**	(132)
Unrealized derivative effects on LME related contracts	**299**	(4)
Significant rationalization charges and closure costs	**40**	29
Pension[4]	**40**	-
Transaction related effects (Sapa)[5]	**-**	(1,463)
Other effects[6]	**237**	-
Extruded Solutions	**616**	(1,438)
Unrealized derivative effects on power contracts	**(7)**	-
Energy	**(7)**	-
Unrealized derivative effects on power contracts[7]	**(36)**	197
Unrealized derivative effects on LME related contracts[7]	**(27)**	23
Other effects[8]	**(34)**	(33)
Unrealized derivative effects (Sapa)[9]		20
Net foreign exchange (gain) loss (Sapa)[9]		5
Calculated income tax effect (Sapa)[9]		(6)
Other and eliminations	**(97)**	206
Items excluded from underlying EBIT	**547**	(974)

1) Negative figures indicate reversal of a gain and positive figures indicate reversal of a loss.
2) Alunorte agreements - provision, refers to the provision recognized in relation to the TAC and TC agreements with authorities in Parà, Brazil, made on September 5, 2018 (see note 35 to the Financial statements).
3) Other effects in Rolled Products reflect a charge related to a customs case in Germany.
4) Pension includes a charge of NOK 40 million due to remeasurement of all UK schemes with Guaranteed Minimum Pensions (GMP) required to be adjusted to equalize pension benefits for gender. The remeasurement is based on the accrued pension benefits in the period between 1990 and 1997.
5) Transaction related effects include the revaluation gain of Hydro's pre-transactional 50 percent share in Sapa, as well as the fair value allocated to inventory of finished goods and to the backlog of contractual deliveries as of closure, sold during fourth quarter 2017.
6) Other effects in Extruded Solutions include a charge of NOK 80 million due to adjustments to the value of certain assets in relation to the acquisition, and a legal agreement of NOK 157 million related to Sapa Profiles Inc. (SPI) that is under investigation (see note 35 to the Financial statements)
7) Unrealized derivative effects on power contracts and LME related contracts result from elimination of changes in the valuation of embedded derivatives within certain internal power contracts and in the valuation of certain internal aluminium contracts.
8) Other effects in Other and eliminations include the remeasurement of environmental liabilities related to closed business in Germany in 2017 and 2018
9) Items excluded in equity accounted investments (Sapa) for the year 2017

Underlying EBITDA NOK million	**Year 2018**	Year 2017
EBITDA	**15,796**	18,344
Items excluded from underlying EBIT	**547**	(974)
Underlying EBITDA	**16,344**	17,369

Underlying earnings per share NOK	**Year** **2018**	Year 2017
Net income (loss)	**4,323**	9,184
Items excluded from net income (loss)	**1,495**	(788)
Underlying net income (loss)	**5,819**	8,396
Underlying net income attributable to non-controlling interests	**184**	331
Underlying net income attributable to Hydro shareholders	**5,635**	8,066
Number of shares	**2,046**	2,044
Underlying earnings per share	**2.75**	3.95

Adjusted net cash (debt), adjusted net cash (debt) to equity ratio and funds from operations to adjusted net cash (debt) ratio

Hydro's capital management measures are described in note 39 to the consolidated financial statements, including reconciliations and comparable information

Underlying RoaCE

Hydro uses underlying RoaCE to measure the performance for the group as a whole and within its operating segments, both in absolute terms and comparatively from period to period. Management views this measure as providing additional understanding of the rate of return on investments over time in each of its capital intensive businesses and in the operating results of its business segments.

RoaCE	Reported		Underlying	
NOK million	**2018**	2017	**2018**	2017
EBIT	**8,522**	12,189	**9,069**	11,215
Adjusted Income tax expense[1)]	**(2,757)**	(2,225)	**(2,721)**	(2,651)
EBIT after tax	**5,765**	9,964	**6,348**	8,564

	December 31		
NOK million	**2018**	2017	2016
Current assets[2)]	**48,027**	41,492	23,722
Property, plant and equipment	**71,299**	72,933	58,734
Other non-current assets	**35,559**	35,710	35,688
Current liabilities[3)]	**(26,444)**	(25,092)	(13,823)
Non-current liabilities[4)]	**(29,018)**	(28,715)	(22,651)
Capital Employed	**99,422**	96,327	81,670

	Reported		Underlying	
Return on average Capital Employed (RoaCE)	**2018**	2017	**2018**	2017
Hydro	**5.9 %**	11.2 %	**6.5 %**	9.6 %

1) Adjusted income tax expense is based on reported and underlying tax expense adjusted for tax on financial items.
2) Excluding cash and cash equivalents and short-term investments.
3) Excluding bank loans and other interest-bearing short-term debt.
4) Excluding long-term debt.

Country by country report

Hydro's country by country report has been developed to comply with legal requirements as stated in the Norwegian Accounting Act §3-3d and the Norwegian Security Trading Act §5-5a, valid from 2014, and updated in 2017, and replaces our former reporting on payments to host governments according to the Extractive Industries Transparency Initiative (EITI). Our reporting includes, and goes beyond, the EITI requirements. According to the Norwegian Accounting Act, the country-by-country reporting should be on a project level, and payments should be reported per public authority. Following a thorough evaluation, we have defined "project" as legal entity in the report, and "public authority" as the three levels federal; state(s); and municipality(-ies).

The reporting requirement applies to Hydro as a Norwegian listed company with exploration and extractive activities. Currently, this includes Hydro's consolidated operations in Brazil, through exploration and extractive activities in Paragominas, in the state of Pará. On a voluntary basis, and in line with our EITI reporting since 2005, we also include the alumina refinery Alunorte. Alumina is refined from bauxite and is the commercial product from Hydro's Bauxite & Alumina business area.

Hydro's primary aluminium production facility Albras is also closely linked to the extraction of raw materials in Pará. In order to better illustrate the tax contribution from Hydro's aluminium value chain in Pará, Albras is included on a voluntary basis in the country-by-country report. In addition, Hydro voluntarily report on indirect tax contributions not covered by the requirements in the country by country report.

To comply with the Norwegian country-by-country regulation, Hydro is required to report on certain information at corporate level related to legal entities, where they are registered, number of employees, and interest paid to other legal entities in Hydro within another jurisdiction. From 2017, it is also required to give a short description of each legal entity's activities, revenue, income before tax, tax accrued and paid in the reporting year, and accumulated earnings.

The Country-by-country report is approved by the board of directors and included in their responsibility statement.

Payments to authorities per project and authority (exploration and extractive activities, alumina refining and aluminium production) in 2018

Extractive related activities (all in Brazil)[1]	Taxes and fees[2]	Royalties	License fees[3]	Infrastructure, contractual[4]	Infrastructure, voluntary[4]	Investments	Revenue[5]	Production volume	Total expenses[5] [6]
	NOK million	NOK million	NOK million	NOK million	NOK million	NOK million	NOK million	1 000 mt	NOK million
Mineracao Paragominas SA, total	**125**	**62**	**2**	**1**	**-**	**300**	**2,011**	**6,214**	**1,857**
Federal	79	6	2						
Pará State	46	18	-						
Paragominas municipality	-	37	-						
Norsk Hydro Brasil Ltda, total	**22**	**-**	**-**	**1**	**6**	**8**	**15**	**-**	**49**
Federal	22	-	-						
Rio de Janeiro State	-	-	-						
São Paulo Municipality	-	-	-						
Alunorte - Alumina do Norte do Brasil SA, total	**73**	**-**	**-**	**10** [8]	**13**	**659**	**9,333**	**3,712**	**11,280**
Federal	**56**	-	-						
Pará State	17	-	-						
Barcarena Municipality	**-**	-	-						
Albras - Alumínio Brasileiro SA, total	**210**	**-**	**-**		**3**	**361**	**7,261**	**250**	**6,929**
Federal	210	-	-						
Pará State	-	-	-						
Barcarena Municipality	-	-	-						
Total[7]	**430**	**62**	**2**	**11**	**22**	**1,328**	**18,620**	**10,176**	**20,115**

1) In 2018, Hydro's extractive activities did not have the following types of payments to host authorities:
- production entitlements
- dividends
- signature, findings and production bonuses
- stocks, shares or other ownership rights

2) Taxes and fees (income, profit and production) except taxes and fees on consumption such as VAT, withholding taxes on behalf of employees, sales tax.

3) License, lease or access fees or other payments for licenses or commissions

4) Payments on improved infrastructure, either contractual based on exploration or operational licenses, or voluntary is based on Hydro's reporting on social investments, please see note S9 to the social statements in Hydro's Annual Report 2017.

5) Including power procurement and sales

6) Costs at Alunorte include purchase of bauxite from Paragominas. Costs at Albras inlcude purchase of alumina from Alunorte.

7) Only figures where a total is presented can be consolidated.

8) Contractual infrastructure payments related to food cards as part of the TAC.

Other tax contributions to authorities in Brazil

The Brazilian tax system is complex and volatile. In addition to the direct taxes reported above on income, profit and production, Brazil has several indirect taxes levied at the federal and state levels, and other taxes levied at the municipal level.

For Hydro, there are three relevant indirect tax mechanisms not covered by the country-by-country requirements, i.e ICMS and PIS/COFINS.

ICMS is a Brazilian state tax on the sale of goods, freight and certain services, similar to VAT. ICMS is intended to be a non-cumulative tax, which means that sales are generating ICMS debits with the seller, and purchases are generating ICMS credits with the buyer. However, as export transactions are exempt from ICMS and not generating ICMS debits, exporters accumulate ICMS credits that cannot be offset with any other taxes. Since ICMS in an indirect tax, the net ICMS effect is reported as a cost in Hydro's financial accounts instead of as a tax item.

In the state of Pará, Hydro is subject to a tax regime that aims at preventing the accumulation of ICMS recognized credits, and reduces net payable ICMS. From our operations, we generate ICMS tax revenue to Pará when purchasing diesel and fuel oil, when Albras acquires electricity, and also on sales of products to customers located outside the state.

The ICMS regime Hydro is subject to requires Hydro to comply with certain conditions related to vertical integration of aluminium production in Pará. It also requires Hydro to contribute to the development in the region and enable sustainable growth in Pará.

The ICMS deferral is subject to approval by Brazil's National Council of Finance Policy (CONFAZ). In 2018, the Public Auditing Prosecutors for the State of Pará (MP-C/PA) initiated a general process before the State Accounting Court to better understand approvals, compliance and transparency of tax incentives established by the State of Pará.

PIS and COFINS are two social contribution taxes charged on gross income, in most cases at the rate of 9.25 percent. Hydro's group companies in Brazil are charged under a non-cumulative system that resembles VAT. Similar to ICMS, export transactions are not subject to this tax. As a result, Brazilian exporters, like Alunorte and Albras, accumulate credits that can be either reimbursed or offset against debts of other federal taxes.

In addition to the indirect taxes described above, Brazilian municipalities levy a property tax. The property tax, IPTU, is a tax levied on the ownership or possession of urban land and property located in the urban area within the municipality. IPTU is due yearly based on the value of the property, according to rates and conditions foreseen in each municipality's legislation.

The table below includes Hydro entities involved in extractive activities as well as other Hydro entities in the state of Pará.

Other taxes paid to authorities in Brazil*

Extractive related activities	ICMS	PIS	COFINS	IPTU	Total contribution
	NOK million	NOK million	NOK million	NOK million	NOK million
Mineracao Paragominas SA, total	**25**	**-**	**-**	**-**	**25**
Federal	-	-	-	-	-
Pará State	25	-	-	-	25
Paragominas municipality	-	-	-	-	-
Norsk Hydro Brasil Ltda, total	**1**	**-**	**-**	**-**	**2**
Federal	-	-	-	-	-
Rio de Janeiro State	1	-	-	-	2
São Paulo Municipality	-	-	-	-	-
Alunorte - Alumina do Norte do Brasil SA, total	**355**	**-**	**-**	**12**	**366**
Federal	-	-	-	-	-
Pará State	**355**	-	-	-	366
Barcarena Municipality	-	-	-	12	-
Albras - Alumínio Brasileiro SA, total	**363**	**20**	**92**	**11**	**486**
Federal	-	20	92	-	486
Pará State	363	-	-	-	-
Barcarena Municipality	-	-	-	11	-
Total	**743**	**20**	**92**	**23**	**878**

*Tax off-sets are not included

Further country by country information for all consolidated legal entities

The Norwegian country by country reporting requirement as stated in the Norwegian Accounting Act and the Country by Country Regulation also require reporting on certain information at corporate level related to legal entities, as included in the table below.

Hydro's subsidiaries have both external revenue derived from sale to Hydro's end customers, and internal revenue derived from sale to other Hydro entities. In the table below both revenue streams are included per legal entity, but in Hydro's consolidated financial statements all internal transactions have been eliminated to arrive at Hydro's revenue. The sum of the different items for Hydro's subsidiaries will therefore not add up to the respective consolidated figures.

In order to present a Grand Total in the country by country report that is comparable to Hydro's consolidated financial statements, we have included all group eliminations as a separate line. These include, but are not limited to, eliminations of internal revenue and cost, internal receivables and payables, distributed profit such as dividends within the group, goodwill and excess values not attributable to individual legal entities, accumulated profits allocated to non-controlling interests and all joint operations and joint ventures.

Assets and liabilities in subsidiaries that have been acquired have been remeasured to fair value in Hydro's financial statements. This value adjustment, often referred to as excess value, represents the difference between the fair value of the company as paid by Hydro, and the carrying value of assets and liabilities as recognized by the subsidiary at the time of purchase. This premium is not reflected in the subsidiaries local statutory reporting. Due to this, figures reported in Hydro's country by country report are not necessarily comparable to the entities' local statutory reporting. Acquired entities are included from the date of acquisition. As a result of rounding adjustments, the figures in one or more of the columns in the table below may not add up to the total of that column.

The information is included in the independent auditor's assurance report.

Further country by country information for all consolidated legal entities

Jurisdiction	Legal entity	Description of the entity's activity	Ownership 31. dec	Number of permanent employees[1)]	Number of temporary employees[1)]	Interest paid to Hydro legal entities in another jurisdiction, NOK million	Revenue, NOK million[2)]	Income before tax, NOK million[3)]	Income taxes, NOK million[4)]	Income taxes paid, NOK million[5)]	Retained earnings, NOK million[6)]
Argentina	Hydro Extrusion Argentina S.A. (previously Sapa Aluminium Argentina SA)	Precision tubing production	100 %	126	-	1	241	2	-2	5	42
Total Argentina				**126**	**-**	**1**	**241**	**2**	**-2**	**5**	**42**
Australia	Hydro Aluminium Australia Pty. Limited[7)]	Local holding company	100%	-	-	-	1,327	-66	-	-	-306
	Hydro Aluminium Kurri Kurri Pty. Limited	Real estate	100%	9	-	-	40	40	-	-	-1,957
Total Australia				**9**	**-**	**-**	**1,366**	**-27**	**-**	**-**	**-1,652**
Austria	Hydro Building Systems Austria GmbH	Sales company	100%	370	29	-	193	2	1	-9	55
	Hydro Components Nenzing GmbH	Extrusion component production	100%	103	10	-	111	-3	-1	1	18
	Hydro Extrusion Nenzing GmbH	Extrusion production	100%	320	9	-	2,063	154	39	33	298
	Hydro Holding Austria GmbH	Local holding company	100%	-	-	-	-	143	-1	7	204
Total Austria				**793**	**48**	**-**	**2,367**	**296**	**38**	**33**	**576**
Belgium	Hydro Allease NV	Support services	100%	-	-	-	6	10	4	2	21
	Hydro Aluminium Belgium BVBA	Support services	100%	-	-	-	-	-	-	-	-
	Hydro Building Systems Belgium NV	Building systems production	100%	221	3	-	460	-	-8	-	-174
	Hydro Extrusion Lichtervelde NV	Precision tubing production	100%	186	-	-	1,529	47	19	-	344
	Hydro Extrusion Raeren S.A.	Extrusion production	100%	180	22	-	794	28	9	2	147
	Norsk Hydro EU Sprl	Public affairs	100%	3	-	-	5	-	-	-	1
	Hydro Extrusion Eupen SA (previously Sapa Extrusion EXPA S.A)	Dies production	100 %	54	-	-	81	-26	-8	-	111
	Hydro Precision Tubing Lichtervelde NV (previously Sapa Precision Tubing Lichtervelde NV)	Precision tubing production	100%	179	5	-	531	-14	5	-	85
	Sapa Precision Tubing Seneffe S.A.	*Entity is dormant*	100%	-	-	-	-	-	-	-	10
Total Belgium				**823**	**30**	**-**	**3,405**	**44**	**21**	**5**	**544**
Brazil	ALBRAS - Alumínio Brasileiro SA	Primary aluminium production	51%	1,165	58	-	7,261	310	110	210	2,981
	ALUNORTE - Alumina do Norte do Brasil S.A.	Alumina refinery	92.1 %	1,922	105	37	9,333	-3,345	-1,000	56	2,473
	Ananke Alumina SA	Local holding company	100%	-	-	-	28	30	10	24	1,645
	Atlas Alumínio SA	Local holding company	100%	-	-	-	274	267	90	74	401
	Calypso Alumina SA	Local holding company	100%	-	-	-	-	-	-	-	-1
	CAP - Companhia de Alumina do Pará SA	Planned alumina refinery	81%	-	-	-	-	-13	-	-	-398

	Hydro Extrusion Brasil S.A. (previsously Sapa Aluminium Brasil S.A)	Precision tubing production	100%	383	20	8	749	-30	-9	4	-36
	Hydro Extrusion Ltda.	Precision tubing production	100%	466	13	-	626	-106	-37	-	-31
	Mineração Paragominas SA	Bauxite mining	100%	1,359	58	-	2,011	215	72	79	810
	Norsk Hydro Brasil Ltda.	Local holding company	100%	358	41	-	15	-36	4	22	-415
	Norsk Hydro Energia Ltda.	Power trading & Energy services	100%	-	-	-	987	5	2	-	4
Total Brazil				**5,653**	**295**	**45**	**21,283**	**-2,703**	**-758**	**470**	**7,434**
Canada	Hydro Aluminium Canada & Co. Ltd.[8)]	Local holding company	100%	3	-	2	2,286	431	55	159	1,355
	Hydro Aluminium Canada Inc.	Local holding company	100%	-	-	-	1	1	-	-	26
	Hydro Extrusion Canada Inc. (previously Sapa Canada Inc.)	Extrusion production	100%	532	2	1	2,632	67	16	31	631
Total Canada				**535**	**2**	**3**	**4,919**	**498**	**70**	**190**	**2,012**
China & Hong Kong	Hydro Aluminium Beijing Ltd.	Sales company	100%	10	-	-	549	32	8	13	69
	Hydro Building Systems (Beijing) Co. Ltd. (previously Sapa Building Systems (Beijing) Co. Ltd.)	Sales company	100%	20	-	-	82	-4	-	-	-71
	Hydro Precision Tubing (Suzhou) Co. Ltd. (previously Sapa Precision Tubing (Suzhou) Co. Ltd.)	Precision tubing production	100%	378	-	-	833	20	8	6	-33
	Sapa Asia Limited	*Entity is in liquidation*	100%	-	-	-	-	-	-	-	-5
	Sapa Extrusion (Jiangyin) Co. Ltd.	Precision tubing production	100%	-	-	-	-	-1	-	-	-27
	Sapa Extrusion (Shanghai) Company Ltd.	Precision tubing production	100%	199	-	-	294	44	13	9	143
	Sapa (Shanghai) Management Co. Ltd.	*Entity is in liquidation*	100%	-	-	-	1	1	3	1	-17
	Sapa Precision Tubing Shanghai Ltd.	Precision tubing production	100%	58	-	-	110	-5	-1	2	12
Total China & Hong Kong				**665**	**-**	**-**	**1,868**	**87**	**31**	**30**	**70**
Croatia	Hydro Building Systems Croatia d.o.o.	*Entity dissolved in 2018*	-	-	-	-	-	-	-	-	-
Total Croatia			-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Czech Republic	Hydro Building Systems Czechia s.r.o. (previously Sapa Building Systems sro)	Sales company	100%	6	-	-	7	-	-	-	1
Total Czech Republic				**6**	**-**	-	**7**	**-**	**-**	**-**	**1**
Denmark	Datoselskabet af 23.august 2016 A/S under frivillig likvidation	*Entity liquidated in 2018*	100%	-	-	-	-	-	-	2	-
	Hydro Aluminium Rolled Products Denmark A/S	Sales company	100%	2	-	-	4	1	1	-	6

	Hydro Extrusion Denmark A/S	Extrusion production	100%	276	-	1	1,267	56	11	6	172
	Hydro Holding Denmark A/S	Local holding company	100%	-	-	-	-	-8	-2	-22	1,431
	Hydro Precision Tubing Tønder A/S	Precision tubing production	100%	447	1	1	1,443	90	20	24	547
Total Denmark				**725**	**1**	**2**	**2,713**	**139**	**30**	**9**	**2,155**
Estonia	Hydro Extrusion Baltics AS (previously Hydro Extrusion Estonia AS)	Extrusion production	100%	12	-	-	56	1	-	-	10
Total Estonia				**12**	**-**	**-**	**56**	**1**	**-**	**-**	**10**
Finland	Hydro Extrusion Finland Oy	Sales company	100%	10	1	-	176	7	1	1	19
Total Finland				**10**	**1**	-	**176**	**7**	**1**	**1**	**19**
France	Extrusion Services S.a.r.l	Local holding company	100%	42	-	-	487	8	2	4	158
	Hydro Albi SNC	Extrusion production	100 %	20	-	-	-	-	-	-1	-
	Hydro Aluminium France S.A.S.	Local holding company	100%	9	-	-	16	5	1	-1	9
	Hydro Aluminium Sales and Trading s.n.c.	Sales company	100%	3	-	-	9	1	-	-	2
	Hydro Buildex Sarl	Extrusion production	100%	105	7	-	557	39	13	5	104
	Hydro Building Systems France Sarl[10)]	Building systems production	100%	710	35	-	3,024	181	69	50	297
	Hydro Building Systems Holding France SAS[12)]	Entity is dissolved in 2018	100%	-	-	-	-	-	-	-	-
	Hydro Extrusion Albi SAS[11)]	Administrative services	100%	171	5	-	992	62	23	-15	210
	Hydro Extrusion Lucé/Châteauroux SAS	Extrusion production	100%	343	5	-	1,028	1	5	-18	-194
	Hydro Extrusion Puget SAS	Extrusion production	100%	402	1	-	873	-26	8	-10	-53
	Hydro France SAS[12)]	Entity is dissolved in 2018	100%	-	-	-	-	-	-	-	-
	Hydro Holding France SAS[12)]	Local holding company	100%	-	-	-	1	107	-21	115	-305
	Hydro Laquage Albi SAS[11)]	Sales company	100%	74	-	-	-	-	-	-	-
	Hydro Tool Center SAS	Tool and spare parts services	100%	5	-	-	43	1	-	-	4
	Sapa Building Systems Puget SAS[10)]	Entity is dissolved in 2018	100%	-	-	-	-	-	-	-	-
	Sapa Shared Service Center France I.T.C s.n.c	IT shared services	100%	-	-	-	20	1	-	-1	1
Total France				**1,884**	**53**	**-**	**7,050**	**381**	**100**	**127**	**234**
Germany	Eugen Notter GmbH	Building systems production	100%	26	1	-	12	-2	-1	2	13
	Hydro Aluminium Deutschland GmbH	Local holding company	100%	69	3	-	49	-5	-23	-8	4,174
	Hydro Aluminium Dormagen GmbH	Finishing	100%	6	4	-	52	9	-	-	5
	Hydro Aluminium Gießerei Rackwitz GmbH	Remelter	100%	-	-	-	1,066	87	-	-	29
	Hydro Aluminium High Purity GmbH	High-purity aluminium production	100%	-	-	-	296	-13	-3	-	54
	Hydro Aluminium Recycling Deutschland GmbH	Remelter	100%	161	38	-	68	14	-1	-	80

	Hydro Aluminium Rolled Products GmbH	Local holding company	100%	3,381	349	-	22,377	-93	62	21	4,334
	Hydro Building Systems Germany GmbH[9)]	Building systems production	100%	88	6	-	1,433	27	-2	-	120
	Hydro Energy GmbH	Energy sourcing	100%	-	-	-	5	4	-	-	108
	Hydro Extrusion Deutschland GmbH	Extrusion production	100%	424	-	-	1,764	51	1	-	116
	Hydro Extrusion Offenburg GmbH	Extrusion production	100 %	226	-	-	676	10	1	-	107
	Hydro Holding Offenburg GmbH	Local holding company	100%	52	-	-	48	-5	-7	21	34
	Hydro Precision Tubing Remscheid GmbH	Precision tubing production	100%	136	-	-	214	-10	1	1	38
	Norsk Hydro Deutschland Verwaltungs GmbH	Local holding company	100%	-	-	-	-	-	-	-	-2
	Sapa Building Systems Germany GmbH[9)]	Building systems production	100%	-	-	-	-	-	-	-	-
	Sapa Germany GmbH (previously Hydro Holding ULM GmbH)	Local holding company	100%	-	-	3	-	-17	23	5	87
	SEGN Standort-Entwicklungs-Gesellschaft Nabwerk mbH	Real estate	100%	-	-	-	-	-	-	-	-
	VAW-Innwerk Unterstützungs-Gesellschaft GmbH	Pension fund	77.5 %	-	-	-	-	-1	1	-	219
Total Germany				**4,569**	**401**	**3**	**28,059**	**57**	**54**	**43**	**9,517**
Greece	Hydro Building Systems A.E.	*Entity is in liquidation*	100%	-	-	-	-	-	-	-	-34
Total Greece				-	-	-	**-**	**-**	**-**	**-**	**-34**
Hungary	Hydro Extrusion Hungary Kft.	Extrusion production and support services	100%	1,652	**-**	1	3,102	15	35	38	55
Total Hungary				**1,652**	**-**	**1**	**3,102**	**15**	**35**	**38**	**55**
India	Sapa BS India Pvt. Ltd.	Sales company	100%	30	-	-	29	-13	-	-	-21
	Sapa Building Systems Pvt. Ltd.	*Entity is dormant*	100%	-	-	-	-	-	-	-	-41
	Sapa Extrusion India Pvt. Ltd.	Precision tubing production	100%	359	-	-	423	4	23	-	-368
	Sapa Precision Tubing Pune Pvt. Ltd.	Precision tubing production	100%	50	-	-	63	1	-	-	-1
Total India				**439**	**-**	**-**	**515**	**-8**	**23**	**-**	**-432**
Italy	Hydro Aluminium Metal Products S.r.l.	Sales company	100%	2	-	-	8	1	-	-	17
	Hydro Building Systems Italy S.P.A.	Building systems production	100%	332	6	-	1,542	10	-31	-8	184
	Hydro Extrusion Italy S.r.l.	Extrusion production	100%	300	32	-	1,445	12	-23	2	325
	Hydro Holding Italy S.P.A.	Local holding company	100%	-	-	-	-	-	-	18	887
Total Italy				**634**	**38**	**-**	**2,995**	**23**	**-54**	**12**	**1,412**
Japan	Hydro Aluminium Japan KK	Sales company	100%	4	2	-	231	10	4	7	62
	Sapa Profiles Japan Ltd.	Liquidated in 2018	-	-	-	-	-	-	-	-	-

Total Japan				**4**	**2**	**-**	**231**	**10**	**4**	**7**	**62**
Latvia	Hydro Extrusion Latvia SIA	*Entity is in liquidation*	100%	-	-	-	6	-	-	-	-5
Total Latvia				**-**	**-**	-	**6**	**-**	**-**	**-**	**-5**
Lithuania	Hydro Building Systems Lithuania UAB	Sales company	100%	-	-	-	71	4	1	1	11
	Hydro Extrusion Lithuania UAB	Extrusion production	100%	222	-	-	256	13	1	1	27
Total Lithuania				222	-	-	**327**	**17**	**1**	**1**	**38**
Luxembourg	Hydro Aluminium Clervaux S.A.	Remelter	100%	53	3	-	1,496	1,156	25	10	179
Total Luxembourg				**53**	**3**	**-**	**1,496**	**1,156**	**25**	**10**	**179**
Mexico	Hydro Aluminium Metals Mexico S. de R.L	Sales company	-	-	-	**-**	-	-	-	-	-
	Hydro Precision Tubing Monterrey S. de R.L. de C.V. (previously Sapa Precision Tubing Monterrey S. de R.L. de C.V.)	Precision tubing production	100%	123	-	-	78	8	5	-1	122
	Hydro Precision Tubing Reynosa S. de R.L. de C.V. (previously Sapa Precision Tubing Reynosa S. de R.L. de C.V)	Precision tubing production	100%	206	-	-	81	7	3	3	19
	Hydro Precision Tubing Services Monterrey S. de R.L. de C.V. (previously Monterrey Extrusions Services S. de R.L. de C.V.)	Precision tubing production	100%	-	-	-	30	1	-	1	-
Total Mexico				**329**	**-**	-	**189**	**16**	**8**	**4**	**140**
Mozambique	Sapa Building Systems Moçambique Lda	*Entity divested in 2018*	100%	-	-	-	1	7	-	-	-
Total Mozambique				-	-	-	**1**	**7**	**-**	**-**	**-**
Netherlands	Hydro Albras B.V.	Local holding company	100%	-	-	-	-	166	-	-	-2
	Hydro Aluminium Brasil Investment B.V.	Local holding company	100%	-	-	-	-	-12	-	-	916
	Hydro Aluminium Investment B.V.	Local holding company	100%	-	-	-	-	4	-	-	-
	Hydro Aluminium Netherlands B.V.	Local holding company	100%	-	-	-	-	1,148	-	-	225
	Hydro Aluminium Pará B.V.	Local holding company	100%	-	-	-	-	-	-	-	-126
	Hydro Aluminium Qatalum Holding B.V.	Local holding company	100%	-	-	-	-	1,166	-	-	893
	Hydro Aluminium Rolled Products Benelux B.V.	Sales company	100%	4	-	-	5	1	-	-	3
	Hydro Alunorte B.V.	Local holding company	100%	-	-	-	-	67	-	-	-1
	Hydro Building Systems Netherlands B.V.	Building systems production	100%	-	-	-	40	5	-	-	-3
	Hydro CAP B.V.	Local holding company	100%	-	-	-	-	-	-	-	-405
	Hydro Extrusion Drunen B.V.	Extrusion production	100%	410	14	-	1,579	29	-2	-	857
	Hydro Extrusion Holding Netherlands B.V. (previously Fintuna Holding (Nederland) B.V.)	Real estate	100%	-	-	-	1	-10	-4	-	-27
	Hydro Extrusion Hoogezand B.V.	Extrusion production	100%	155	-	-	611	21	3	14	186
	Hydro Holding Netherlands B.V. (previously Sapa Nederland B.V.)	Local holding company	100%	-	-	3	-	-9	-8	-6	58

	Hydro Paragominas B.V.	Local holding company	100%	-	-	-	-	246	-	-	-4
	Norsk Hydro Holland B.V.	Local holding company	100%	4	-	-	14	3,638	-	-	9,001
	Sapa Holdings (Nederland) B.V.	*Entity is dormant*	100%	-	-	-	-	-	-	-	-
Total Netherlands				**573**	**14**	**3**	**2,251**	**6,460**	**-10**	**9**	**11,571**
Norway	Hycast AS	Remelter	100%	56	-	-	271	3	1	4	110
	Hydro Aluminium AS	Primary aluminium production	100%	2,401	500	-	52,594	6,330	927	1,229	24,513
	Hydro Aluminium Rolled Products AS	Rolling mill	100%	646	49	-	4,623	152	33	40	794
	Hydro Energi AS	Power production	100%	181	17	-	9,590	222	521	451	-899
	Hydro Energi Invest AS	Local holding company	100%	-	-	-	-	-	-	-	-
	Hydro Extruded Solutions AS	Local holding company	100%	139	-	142	2	989	134	5	2,568
	Hydro Extrusion Norway AS	Extrusion production	100%	102	7	-	381	1	-1	-	53
	Hydro Invest Porsgrunn AS	Local holding company	100%	-	-	-	-	-	-	-	2
	Hydro Kapitalforvaltning AS	Local holding company	100%	-	-	-	11	-	-	-	-
	Hydro Vigelands Brug AS	High-purity aluminium production	100%	34	1	-	85	9	2	-	74
	Hydro Vigelandsfoss AS	Power production	100%	-	-	-	78	44	21	7	203
	Industriforsikring AS	Insurance	100%	-	-	-	164	10	2	-	454
	Norsk Hydro ASA	Parent company	-	286	8	-	232	1,292	276	55	30,337
	Røldal-Suldal Kraft AS	Power production	91.3 %	-	-	-	717	557	287	148	128
	Svelgfos AS	Power trading	100%	-	-	-	-	-	-	-	1
	Sør-Norge Aluminium AS	Primary aluminium production	100%	271	88	-	2,617	66	21	-	958
	Vækerø Gård Barnehage ANS	Company kindergarden	100%	-	-	-	-	-	-	-	-
Total Norway				**4,116**	**670**	**142**	**71,366**	**9,676**	**2,223**	**1,938**	**59,298**
Poland	Hydro Aluminium Rolled Products Polska Sp. z o.o.	Sales company	100%	5	-	-	4	1	-	-	1
	Hydro Building Systems Poland Sp. z o.o. (previously Sapa Building Systems Sp. z o.o.)	Sales company	100 %	55	-	1	148	-	-	-	-6
	Hydro Extrusion Poland Sp. z.o.o (previously Sapa Aluminium Sp. z o.o)	Extrusion production	100%	1,353	6	1	2,473	132	31	36	710
Total Poland				**1,413**	**6**	**2**	**2,625**	**133**	**31**	**36**	**705**
Portugal	Hydro Aluminium Extrusion Portugal HAEP S.A.	Extrusion production	100%	97	28	-	382	9	-5	-	72
	Hydro Building Systems Portugal (HBSPT) SA (previously Sapa Portugal SA)[13)]	Sales company	100%	76	-	-	263	13	23	10	19
Total Portugal				**173**	**28**	**-**	**644**	**21**	**17**	**10**	**90**
Romania	Hydro Extrusion S.R.L.	Extrusion production	100 %	244	-	1	514	-30	1	-	-160
Total Romania				**244**	**-**	**1**	**514**	**-30**	**1**	**-**	**-160**

Russian Federation	OOO Sapa Building Systems	*Liquidated in 2018*	-	-	-	-	-	-	-	-	-
Total Russian Federation				-	-	-	**-**	**-**	**-**	**-**	**-**
Singapore	Hydro Aluminium Asia Pte. Ltd.	Trading company	100%	15	1	-	8,134	140	17	11	534
	Hydro Aluminium Asia Rolled Products Pte. Ltd.	Sales company	100%	2	-	-	5	1	-	-	5
	Hydro Holding Singapore Pte. Ltd.	Sales and local holding company	100%	17	-	-	49	-	-	-	-407
Total Singapore				**34**	**1**	**-**	**8,188**	**141**	**17**	**11**	**132**
Slovakia	Hydro Extrusion Slovakia a.s.	Extrusion production	100%	377	-	-	668	21	6	6	-34
	Slovalco a.s.	Primary aluminium production	55.3 %	508	-	-	3,837	345	74	66	708
	ZSNP DA, s.r.o.	Transportation	55.3 %	-	-	-	9	2	-	-	4
Total Slovakia				**885**	**-**	**-**	**4,514**	**368**	**80**	**73**	**678**
South Africa	Technal Systems South Africa (Pty) Ltd.	*Entity is in liquidation*	100%	-	-	**-**	-	-2	-	-	-13
Total South Africa				-	-	-	**-**	**-2**	**-**	**-**	**-13**
Spain	Hydro Aluminium Iberia S.A.U	Remelter	100%	49	2	-	919	81	15	32	243
	Hydro Aluminium Rolled Products Iberia S.L.	Sales company	100%	6	-	-	10	4	1	1	6
	Hydro Building Systems Spain S.L.U.	Building systems production	100%	256	2	-	781	5	7	-	22
	Hydro Extruded Solutions Holding S.L.U.	Local holding company	100%	46	1	-	38	-	-	-	21
	Hydro Extrusion Spain S.A.U.	Extrusion production	100%	394	37	-	1,514	31	4	-7	518
Total Spain				**751**	**42**	**-**	**3,262**	**121**	**27**	**25**	**811**
Sweden	Hydro Aluminium Sverige AB	Sales company	100%	2	-	-	3	-	-	-	6
	Hydro Building Systems Sweden AB	Building systems production	100%	111	2	-	657	86	-	-	13
	Hydro Extruded Solutions AB	Local holding company | R&D	100%	48	-	19	64	-119	48	59	1,616
	Hydro Extrusion Sweden AB	Extrusion production	100%	894	15	3	2,545	21	-5	-	668
	Sapa China Holding AB	Local holding company	100%	-	-	-	-	-	-	-	-
Total Sweden				**1,055**	**17**	**22**	**3,270**	**-12**	**43**	**60**	**2,303**
Switzerland	Hydro Aluminium International SA	Sales company	100%	12	-	15	24,265	1,048	124	-	66
	Hydro Aluminium Walzprodukte AG	Sales company	100%	3	-	-	4	1	-	-	3
	Hydro Building Systems Switzerland AG	Sales company	100%	38	-	-	241	16	4	2	36
Total Switzerland				**53**	**-**	**15**	**24,511**	**1,065**	**127**	**2**	**106**
Turkey	Hydro Yapi Sistem Sanayi VE Ticaret AS	Sales company	100%	31	-	1	64	-1	-1	4	40
Total Turkey				**31**	**-**	**1**	**64**	**-1**	**-1**	**4**	**40**
Ukraine	Sapa Profiles UA	*Entity is in liquidation*	100%	-	-	-	-	-	-	-	-

Total Ukraine				-	-	-	**-**	**-**	**-**	**-**	**-**
United Arab Emirates	Hydro Building Systems Middle East FZE	Sales company	100%	15	-	-	173	24	-	-	43
Total United Arab Emirates				**15**	**-**	-	**173**	**24**	**-**	**-**	**43**
United Kingdom	Hydro Aluminium Deeside Ltd.	Remelter	100%	45	-	-	834	34	7	2	74
	Hydro Aluminium Rolled Products Ltd.	Sales company	100%	-	-	-	11	2	1	-	3
	Hydro Building Systems UK Ltd.	Building systems production	100%	162	1	-	596	-6	2	4	331
	Hydro Components UK Ltd.	Extrusion component production	100%	-	-	2	652	-79	-16	6	130
	Hydro Extrusion UK Ltd.	Extrusion production	100%	962	-	-	1,735	20	-13	-3	7
	Hydro Holdings UK Ltd.	Local holding company	100%	6	-	-	1	-226	-	-7	-71
	Sapa Aluminium Extrusion Ltd.	*Entity dissolved in 2018*	100%	-	-	-	-	-	-	-	-
	Sapa Building Systems (Wakefield) Ltd.	*Entity dissolved in 2018*	100%	54	-	-	-	-	-	-	-
	Sapa UK Ltd.	*Entity is dormant*	100%	-	-	-	-	-	-	-	-
Total United Kingdom				**1,229**	**1**	**2**	**3,828**	**-254**	**-20**	**3**	**474**
USA	EMC Ashtabula Inc	*Entity is dormant*	100%	-	-	-	-	-9	-2	-	-2,002
	EMC Metals Inc	Local holding company	100%	-	-	-	-	-9	3	-	378
	Hydro Aluminium Metals USA, LLC	Local holding company	100%	140	2	-	5,845	180	3	-	-1,576
	Hydro Aluminium Tomago Inc.	Local holding company	100%	-	-	-	-	-	-	-	-174
	Hydro Building Systems North America Inc. (previously Hydro Aluminium USA Inc.)	Sales company	100%	-	-	-	-	-	-	-	-
	Hydro Extruder LLC	Extrusion production	100%	1,186	1	-	5,981	193	-24	3	397
	Hydro Extrusion Delhi LLC	Extrusion production	100%	356	2	-	1,635	-2	14	-	51
	Hydro Extrusion North America LLC	Extrusion production	100%	1,127	-	-	6,302	147	-20	-2	-2,156
	Hydro Extrusion Portland Holding Inc.	Local holding company	100%	-	-	-	-	-34	-	-	252
	Hydro Extrusion Portland Inc.	Extrusion production	100%	632	1	-	2,151	67	-1	2	410
	Hydro Extrusion USA LLC	Extrusion production and support services	100%	2,681	16	10	12,767	502	141	7	1,045
	Hydro Holding North America Inc.	Local holding company	100%	-	-	-	-	76	-140	49	215
	Hydro Metals Holding US LLC	Local holding company	100%	-	-	-	-	106	5	-	101
	Hydro Precision Tubing Adrian Inc.	*Entity is dormant*	100%	-	-	-	-	-5	-	-	-298
	Hydro Precision Tubing Louisville Inc.	*Entity is dormant*	100%	-	-	-	-	-	-	-	-70
	Hydro Precision Tubing Monterrey Central LLC (previously Sapa Precision Tubing Central LLC)	Precision tubing production	100%	-	-	-	-	-	-	-	-
	Hydro Precision Tubing Monterrey LLC (previously Sapa Precision Tubing LLC)	Precision tubing production	100%	-	-	1	474	61	13	-	177

	Hydro Precision Tubing USA LLC (previously Sapa Precision Tubing Rockledge LLC)	Precision tubing production	100%	166	-	-	1,161	66	-11	-2	33
	Norsk Hydro North America LLC (previously Norsk Hydro North America Inc.)	Local holding company	100%	-	-	-	-	124	271	-1	-486
Total USA				**6,288**	**22**	**11**	**36,316**	**1,464**	**251**	**57**	**-3,702**
Vietnam	Sapa Ben Thanh Aluminium Profiles Co. Ltd	Extrusion production	65%	233	5	-	150	18	3	1	5
Total Vietnam				**233**	**5**	**-**	**150**	**18**	**3**	**1**	**5**
Total Eliminations, non-controlling interests and goodwill and excess values not attributable to specific legal entities				-	-	**-**	-87,839	-12,368	**-291**	**-21**	-34,935
Total joint operations and joint ventures				-	-	**-**	**3,163**	**-383**	**10**	**38**	**-2,699**
Grand total	[14]			**36,236**	**1,680**	**254**	**159,377**	**6,462**	**2,139**	**3,231**	**57,127**

1) Number of employees is based on the legal entity each employee is employed by

2) Revenue consists of external and internal revenue from sales of products and services, and realized and unrealized results from derivatives related to sale of products. Elimination of sale to other Hydro companies is presented on a combined basis in "Eliminations". Revenue in this report equals revenue in Hydro's consolidated financial statements

3) For the composition of income before tax, please refer to consolidated income statements and related notes

4) For a description and the composition of income taxes, please refer to consolidated income statements and related notes

5) Income taxes paid represents the actual payments made during the year independent of which year the tax relates to. In some tax regimes including Brazil, tax payments include settlement of tax liabilities with tax credits generated from other payments to federal authorities

6) Retained earnings consists of accumulated gains and losses, net of distributed profits from the point of view of the legal entity. Retained earnings existing in the companies at the time of Hydro's acquisition is deducted in "Eliminations". In addition, "Eliminations" consists of unrealized gains in transactions between Hydro companies

7) Hydro Aluminium Australia Pty Ltd is used to report Hydro portion of operations for Tomago Aluminium Company Pty Limited, a joint operation.

8) Hydro Aluminium Canada & Co. Ltd. Is used to report Hydro portion of operations for Aluminerie Alouette Inc, a joint venture

9) Sapa Building Systems GmbH was merged into Hydro Building Systems Germany GmbH in Q2 2018

10) Sapa Building Systems Puget SAS was merged into Hydro Bulding Systems France SARL in Q1 2018

11) Hydro Laquage Albi SAS was merged into Hydro Extrusion Albi SAS in Q4 2018

12) Hydro Building Systems Holding France SAS was merged into Hydro Holding France SAS in Q3 2018. Hydro France SAS was dissolved into Hydro Holding France SAS in Q4 2018

13) Hydro Building Systems Lda. and Naco Portugal SGPS Lda merged into Hydro Building Systems Portugal SA (POV) in Q2 2018

14) Only figures where a total is presented can be consolidated

Entity descriptions

In the table above, each company has been given a short description of its main activities. Some of the entities can also have other activities as listed below. For a complete overview of the description given of each company in public registers, see www.hydro.com/reporting2017

Short description	Main activities
Alumina refinery	Refining of bauxite to alumina. Hydro operates the Alunorte alumina refinery
Bauxite mining	Mining of bauxite, the raw material for aluminium productions. Hydro has only one consolidated bauxite mine
Building systems production	Manufacturing or production of building systems
Company kindergarden	Kindergarden for children of employees or tenants
Dies production	Production of dies for extrusion of aluminium
Energy sourcing	Sourcing of energy for Hydro operations
Extrusion component production	Manufacturing or production of components
Extrusion production	Includes one or more extrusion plant(s) and is normally also responsible for sales and marketing of its products. R&D activities can also be included
Finishing	Slitting of rolled products for automotive
High-purity aluminium production	Production of aluminium of minimum 99.99 percent purity
Insurance	In-house insurance
IT shared services	IT shared services for Hydro operations
Local holding company	Holding & Financing. Holding shares or other equity instruments. Administrative, management or support services
Pension fund	Employee pension fund
Power production	Production of hydropower in Norway
Power trading	Trading of power and energy services
Precision tubing production	Manufacturing or production of extruded aluminium products, such as aluminium tubes, micro-port extrusions, and welded aluminium tubes
Primary aluminium production	Includes one or more primary aluminium plant(s), and may also include casting, anode production and/or R&D activities
Public affairs	Hydro's Brussels office
Real estate	Development and property management. Owner of land. Developing of infrastructure
R&D	Research and development activities
Remelter	Facility remelting standard ingots, process scrap and/or post-consumer scrap
Rolling mill	Production of rolled products
Sales company	Sales, marketing and distribution offices
Support services	Administrative, management or support services
Tool and spare parts services	Provides tool and spare parts services, in addition to administrative and management support
Trading company	Sales, marketing and distribution of casthouse aluminium products
Transportation	Transport of raw materials by train tracks

Norwegian code of practice for corporate governance

This chapter provides a detailed overview of how Hydro follows the Norwegian Code of Practice for Corporate Governance of 2018. Information that Hydro must provide in accordance with the Norwegian Accounting Act, section 3.3b, is also included. This overview should be seen in context with the general corporate governance report provided in Hydro's annual report for 2018.

Deviations from the Norwegian code of practice for corporate governance

In the board of directors' assessment, we have deviations from three sections in the code of practice:

Section 6, General meeting of shareholders:
Hydro has two deviations from this section:

1) *"Ensure that the members of the board of directors ... are present at the general meeting":* The entire board of directors has generally not participated in the general meeting. Matters under consideration at the general meeting of shareholders have not yet required this. The chairperson of the board of directors is always on hand to present the report and answer any questions. Other board members participate as needed. The board of directors considers this to be adequate.

2) *"Making arrangements to ensure an independent chairman for the general meeting":* Section 9 in Hydro's articles of association states that the general meeting is chaired by the chairperson of the corporate assembly, or, in his or her absence, by the deputy chair. This arrangement has been approved by the company's general meeting.

Section 7, Nomination committee:
Hydro has one deviation from this section:

"The company's guidelines for the nomination committee should establish rules for rotation of the members of the nomination committee": The nomination committee has no formal rules on rotation of its members. The nomination committee's mandate expresses, however, the intention to "over the course of time balance the need for continuity against the need for renewal in respect of each governing organ." The chairperson of the committee, who is also the chairperson of the corporate assembly, has been a member of the committee since 2012, became acting chairperson in 2014 and was elected chairperson in 2015. The other members were elected to the nomination committee in 2008, 2014 and 2015.

Section 14, Takeovers:
Hydro has one deviation from this section:

"The board of directors should establish guiding principles for how it will act in the event of a take-over bid": The board of directors has chosen not to prepare explicitly formulated general principles for handling takeover bids. The reason for this is that the Norwegian state, represented by the Ministry of Trade, Industry and Fisheries, owns 34.3 percent of the Hydro shares (as of 31.12.2018) and has by virtue of the Active Ownership Report (Report to the Storting no. 27 (2013-2014)) expressed a long-term ownership perspective in the company for the purpose of retaining its head office and research activities in Norway.

1. Statement of corporate governance

Hydro follows the Norwegian Code of Practice for Corporate Governance of 2018.

2. Hydro's business

Hydro is a global aluminium company with production, sales and trading activities throughout the value chain, from bauxite, alumina and energy generation to the production of primary aluminium and rolled and extruded products as well as recycling. Based in Norway, the company has 35,000 employees involved in activities in 40 countries on all continents. Rooted in more than a century of experience in renewable energy production, technology development and partnerships, Hydro is committed to strengthening the viability of the customers and communities we serve.

The company's objectives, as stated in its articles of association, are to engage in industry, commerce and transport, to utilize energy resources and raw materials, and to engage in other activities connected with these objectives. Its business activities may also be conducted through participation in or in cooperation with other enterprises.

The board of directors evaluates the company’s objectives, strategies and risk profile at least annually and reports on it in the Board of Directors’ report

The Hydro Way represents our framework for leadership, organization and culture and is the foundation for our governance system, including our code of conduct. Hydro's Code of Conduct has been approved by the board of directors, which also oversees that Hydro has appropriate corporate directives for, among other things, risk management, HSE and corporate responsibility.

References: Hydro's articles of association are available at www.hydro.com/governance. Learn more about The Hydro Way and Hydro’s corporate directives at www.hydro.com/principles, and Board of Directors’ Report 2018 in this document.

3. Equity and dividend

In the opinion of the board of directors, Hydro's equity capital is appropriate to the company's objectives, strategy and risk profile.

Hydro's dividend policy is in the long term to pay out, on average, 40 percent of net income as ordinary dividend over the cycle to our shareholders. The dividend policy has a floor of NOK 1.25 per share.

The dividend per share is proposed by the board of directors, based on Hydro's dividend policy, and approved by the general meeting of shareholders.

The board of directors may obtain authorization from the general meeting of shareholders to buy back Hydro shares in the market. In such cases, the board will normally request that the shares are acquired in the open market, and that the authority lasts no longer than until the next general meeting.

When the general meeting of shareholders considers whether or not to authorize the board of directors to carry out share capital increases for different purposes, each purpose must be considered separately by the meeting. Such authorization will be limited in time, and will last no longer than until the date of the next general meeting. Authorization granted to the board of directors is restricted to specific purposes. Such authorization was last given in 2010 in connection with the Vale transaction.

See also item 4.

References: Learn more about Hydro's equity and dividend policy under Shareholder information in Hydro's Annual Report 2018.

4. Equal treatment of shareholders

Hydro has one share class. All the shares have the same rights.

Transactions involving own shares are normally executed on the stock exchange. Buybacks of own shares are executed at the current market rate.

Shareholders who are registered in the Norwegian Central Securities Depository (VPS) may vote in person or by proxy at the general meeting of shareholders. Invitations are sent to the shareholders or to the bank/broker where the shareholder's securities account is held.

Sales of shares to employees in Norway are conducted at a discount to market value. See also item 6.

Contact between the board of directors and the investors is normally conducted via the management. Under special circumstances the board, represented by the chairperson, may conduct dialogue directly with investors.

Regulation of share issues and preemptive rights are described in the company's articles of association.

State ownership
As of December 31, 2018 the Norwegian state, represented by the Ministry of Trade, Industry and Fisheries, owned 34.3 percent of Hydro's issued shares. Hydro holds regular meetings with the Ministry, where topics discussed include Hydro's economic and strategic development, corporate social responsibility, and the Norwegian State's expectations regarding results and returns on investments. These meetings are comparable to what is customary between a private company and its principal shareholders. The meetings comply with the provisions specified in Norwegian company and securities legislation, not least with respect to equal treatment of shareholders. As a shareholder, the Norwegian state does not usually have access to more information than what is available to other shareholders. If state participation is imperative and the government must seek approval from the Norwegian parliament (Stortinget), it may be necessary to provide the Ministry with insider information. In such cases, the state is subject to the general rules that apply to the handling of such information.

References: Learn more about major shareholders in the "Shareholder Information" section of Hydro's Annual Report 2018 and sale of the Hydro share to employees in note 17 (Employee remuneration) to the consolidated financial statements. Hydro's code of conduct can be found on www.hydro.com/principles. Hydro's articles of association can be found on www.hydro.com/governance. See also note 11 (Related party information) to the consolidated financial statements.

5. Freely negotiable shares

The Hydro share is freely negotiable. It is among the most traded shares on the Oslo Stock Exchange and is subject to efficient pricing. As of December 31, 2018 the Norwegian state, represented by the Ministry of Trade, Industry and Fisheries, owned 34.3 percent of Hydro's shares, while the Government Pension Fund Norway owned 6.7 percent. Shareholding is based on information from the Norwegian Central Securities Depositary (VPS) as of December 31, 2018. Due to lending of shares, an investor's holdings registered in its VPS account may vary.

References: Learn more about Hydro's equity and dividend policy under Shareholder information in Hydro's Annual Report 2018.

6. General meeting of shareholders

Notice of a general meeting of shareholders with supporting information is normally published on www.hydro.com more than three weeks in advance, and is sent to the shareholders at least three weeks before the meeting is held.

Notice of a general meeting of shareholders provides information on the procedures which shareholders must observe in order to participate in and vote at the meetings. Such notice also details:

- the procedure for representation by proxy, including the use of a form of proxy
- the right of shareholders to propose resolutions for consideration by the general meeting of shareholders.
- the website where the notice of the meeting and other supporting documents will be made available

The following information is available at www.hydro.com:

- information on the right of shareholders to propose matters for consideration by the general meeting of shareholders
- how to make proposals for resolutions for consideration by the general meeting or how to comment on matters for which no resolution is proposed
- form of proxy

Our aim is that resolution proposals and supporting information that are distributed are sufficiently detailed and comprehensive to enable shareholders to reach decisions on the matters to be considered at the meeting.

The notification deadline for shareholders wishing to attend the general meeting of shareholders is maximum five days prior to the meeting.

Shares registered in a nominee account must be re-registered in the Norwegian Central Securities Depository (VPS) and be registered in the VPS on the fifth working day before the general meeting of shareholders in order to obtain voting rights.

Shareholders who are unable to attend in person may vote by proxy. Hydro will nominate a person who will be available to vote on behalf of shareholders as their proxy.

The general meeting of shareholders votes for each candidate nominated for election to the company's corporate assembly and nomination committee.

To the extent possible, the form of proxy will facilitate separate voting instructions for each matter to be considered by the meeting and for each of the candidates nominated for election. It is possible to vote electronically in advance.

The general meeting of shareholders is chaired by the chairperson of the corporate assembly or, in his or her absence, by the deputy chairperson.

The chairperson of the board of directors, minimum one nomination committee representative, the President and CEO, and the auditor attend the general meeting.

References: Learn more about the general meeting of shareholders at www.hydro.com/investor

Deviations: See the first page of this section.

7. Nomination committee

In accordance with Hydro's articles of association, the company must appoint a nomination committee. This committee is comprised of minimum three members, maximum four, who are either shareholders or shareholder representatives. The committee's chairperson and members are appointed by the general meeting of shareholders. At least two, including the chairperson, must be elected from the shareholder-elected representatives in the corporate assembly. If the chairperson resigns as member of the Nomination Committee during the electoral period, the Nomination Committee shall elect among its members a new chairperson for the remainder of the new chairperson's electoral period.

The guidelines for the nomination committee have been approved by the general meeting of shareholders, which also determines the remuneration of the committee. All shareholders may propose candidates for the nomination committee at any time. In order to be considered at the next ordinary election, proposals must be submitted by the end of November in the year before the election year.

The recommendations of the nomination committee include details on the candidates' background and independence.

The nomination committee ensures that due attention is paid to the interests of the shareholder community and the company's requirements for competence, capacity and diversity. The nomination committee also takes account of relevant statutory requirements regarding the composition of the company's governing bodies.

According to its mandate, the Nomination Committee shall be receptive to external views and shall ensure that any deadlines for proposals regarding members of the Corporate Assembly, the Nomination Committee and the Board of Directors are published well in advance on the Company's website. In carrying out its duties the Nomination Committee should actively maintain contact with the shareholder community and should ensure that its recommendations are anchored with major shareholders.

All members of the nomination committee are independent of Hydro's board of directors, chief executive officer and other executive management staff. As the largest shareholder, the Norwegian state is represented on the nomination committee by secretary general Mette I. Wikborg.

References: Hydro's Articles of Association can be found at www.hydro.com/governance. More information about Hydro's nomination committee can be found at the same site. Members of the nomination committee are listed on www.hydro.com/governance. Nominations can be submitted electronically, also from www.hydro.com/governance

Deviations: See the first page of this section.

8. Corporate assembly and board of directors: composition and independence

All board directors, members of the board committees and members of the corporate assembly are independent of the company's executive management and material business relationships. One member of the corporate assembly is dependent of major Hydro shareholders: Nils Bastiansen, who is an employee of the Government Pension Fund Norway, is a member of the corporate assembly. There were a few matters where certain board members were disqualified. Liv Monica Stubholt, a board member until May 2018, is partner in the Norwegian law firm Advokatfirmaet Selmer DA. Selmer has had assignments for Hydro resulting in fees of NOK 0.5 million in the period January to May 2018. Stubholt has not been involved in these services to Hydro. Thomas Schulz is the CEO of the listed company FLSchmidt. Sales and purchases between FLSchmidt and fully owned Hydro subsidiaries totaled DKK 21.8 million in 2018. Schulz was not directly involved in these transactions

Two-thirds of the corporate assembly and their deputies are elected by the general meeting of shareholders. The nomination committee nominates candidates with a view to obtain a broad representation by the company's shareholders and other relevant stakeholders with competence in, for example, technology, finance, research, and corporate social responsibility.

The corporate assembly elects the board of directors, including its chair and deputy chair.

In compliance with Hydro's articles of association, the board of directors consists of between nine and 11 members. These are elected for a period of up to two years.

The nomination committee aims to achieve a board composition whereby the members complement each other professionally and the board of directors is able to function as a corporate body.

As of December 31, 2018, seven of the board's directors owned a total of 114,520 shares. Hydro has no share purchase program for board members, with the exception of the employee representatives, who are entitled to buy shares through the Norwegian employee share purchase scheme. All share purchase transactions are conducted in compliance with the Securities Trading Act.

References: The Government Pension Fund Norway is a significant shareholder in Hydro. An overview of the members of the corporate assembly, the current composition of the board of directors and information about their independence, and Hydro's articles of association at www.hydro.com/governance

9. The work of the board of directors

The board of directors has established procedures for its own work and that of the company's management, with particular emphasis on clear internal division of responsibilities whereby the board has responsibility for supervising and administrating the company, and the company's management has responsibility for the general operation of the group.

Conflicts of interests and disqualification
Hydro's Code of Conduct contains guidelines for, among other things, how conflicts of interests that may arise should be dealt with. The code applies to all of Hydro's board members and employees. It is the opinion of the board of directors that there were no transactions that were material between the group and its shareholders, board members, corporate management board or related parties in 2018 except those described under item 8.

If the chairperson of the board is or has been actively involved in a given case, for example in negotiations on mergers, acquisitions etc., another board director will normally lead discussions concerning that particular case.

The board of directors has an annual work plan, with particular emphasis on objectives, strategy and implementation.

Since 2001, Hydro has had an audit committee and a compensation committee. The audit committee has four members and the compensation committee three members. The shareholder-elected members are all independent of the company. In the opinion of the board of directors, the audit committee meets the Norwegian requirements regarding independence and competence.

The board of directors conducts an annual self-assessment of its work, competence and cooperation with management and a separate assessment of the chairperson of the board. In addition, the audit committee performs a self-assessment. The assessment results are submitted to the nomination committee, which in turn assesses the board's composition and competence.

References: See the section Board developments in the Board of Directors' report. Information about the board of directors and its committees, and the board members' competence can be found in the chapter Corporate Governance in Hydro's Annual Report 2018. The board of directors' mandate can be found at www.hydro.com/governance

10. Risk management and internal controls

The board of directors ensures that the company has sound internal controls and appropriate risk management systems through, for example, an annual review of the key risk areas and the company's internal controls. Internal audit corporate reports directly to the board of directors, but is for administrative purposes placed under the purview of the chief financial officer.

Hydro's internal control system includes all parts of our corporate directives, including our code of conduct and HSE and corporate social responsibility requirements. A more detailed description of the company's internal controls and risk management systems related to financial reporting can be found at www.hydro.com/governance

References: A review of Hydro's major risks can be found in the section Risk review in the Board of Directors' report.

11. Remuneration of the board of directors

The board directors elected by the shareholders perform no duties for the company other than their board duties.

Remuneration is determined by the corporate assembly, based on the recommendation of the nomination committee. The nomination committee recommends compensation with the intention that it should reflect the board's responsibility, competence and time commitment as well as the company's complexity and global activities compared with the general level of directors' fees in Norway. Remuneration of the board of directors is based neither on performance nor on shares or share options.

References: All aspects of remuneration of the board of directors are described in note 10 (Board of directors and corporate assembly) to the consolidated financial statements. See also Hydro's articles of association.

12. Remuneration of the executive management

The board of directors has established guidelines for remuneration of members of the executive management.

These guidelines are communicated to the general meeting of shareholders and included in the annual report. The guidelines for determining remuneration of the executive management are based on the main principles for Hydro's remuneration policy, which is that Hydro shall pay its employees a total compensation package that is competitive, but not among the highest, and in line with good industry standards locally. Where appropriate, compensation packages should also include a performance-based component, and the basic salary should reflect individual performance.

The guidelines are also intended to contribute to long-term value creation for the company's shareholders. A ceiling has been set on performance-based compensation. The company has share-based long-term incentive programs, but no share option scheme for its executive management.

The board of directors' statement on management remuneration is made public through note 8 to the consolidated financial statements. Note 8 is sent forward to the general meeting of shareholders for advisory vote, however, the part of section of note 8 which concerns compensation based on shares is presented for a binding vote.

References: The board's guidelines for management remuneration are described in note 8 (Board of directors' statement on management remuneration) to the consolidated financial statements. All aspects of remuneration of executive management are described in note 9 (Management remuneration). The employee share purchase plan is described in note 17 (Employee remuneration). Hydro's remuneration policy is also described in Hydro's people policy, which can be found at www.hydro.com/principles

13. Information and communication

Hydro has established guidelines for the company's reporting of financial and extra-financial information based on transparency and with regard to the requirement of equal treatment of all parties in the securities market. This also pertains to contact with shareholders outside of the general meeting of shareholders.

Shareholder information is available at www.hydro.com. The financial statements and annual report are sent free of charge to shareholders on request. Notice of general meeting of shareholders is sent directly to shareholders with known addresses unless they have consented to receive these documents electronically. All information sent to the shareholders is made available at hydro.com when distributed. Presentation of the quarterly reports as well as the annual shareholder meeting are simultaneously broadcasted through web casts. All relevant information is sent to the Oslo Stock Exchange electronically for public storage.

Hydro has emergency plans in place at the relevant levels in the organization. These plans are exercised regularly. Rules for who can speak on behalf of the company are regulated through Hydro's code of conduct.

References: A financial calendar is available in this report and at www.hydro.com/investor where also more information about web casts and the Hydro share can be found, including key legal information for shareholders in Norsk Hydro ASA. Hydro's code of conduct is available at www.hydro.com/principles

14. Takeovers

The board of directors will handle takeover bids in accordance with Norwegian law and the Norwegian Code of Practice for Corporate Governance. There are no defense mechanisms against acquisition offers in our articles of association or in any underlying steering document. We have not implemented any measures to limit the opportunity to acquire shares in the company. See also item 5.

Deviations: See the first page of this section.

15. Auditor

The external auditor annually presents to the audit committee the main features of the plan for the audit of Hydro.

The external auditor participates in considering relevant matters in meetings of the audit committee. The minutes from these meetings are distributed to all the board directors. This practice is in line with the EU audit directive. Each year the auditor expresses its opinion on internal control procedures to the audit committee including identified weaknesses and proposals for improvement.

The auditor participates in board meetings where the company's financial statements are discussed. In the meetings the auditor will review material changes in the company's accounting policies, assess material accounting estimates and any other material matters on which the auditor and management may disagree, and identify weaknesses in and suggest improvements to the company's internal controls. The board of directors and the audit committee meet at least annually and hold meetings with the external auditor without members of the corporate management present.

Hydro places importance on independence and has clear guidelines regarding the use of services from external auditors. All use of services from an external auditor, including non-audit services, is subject to prior approval as defined by the audit committee.

Remuneration of the auditor is stated in the annual report. It is also included as a separate agenda item to be approved by the annual general meeting of shareholders.

In 2010, the general meeting of shareholders chose KPMG as new external auditor for the group with effect from the reporting period 2010.

References: Learn more about the external auditor in the sections Corporate Governance and Viability Performance statements in Hydro's Annual Report 2018, note 43 (Auditor's remuneration) to the consolidated financial statements, and Note 3 (Management remuneration, employee costs and auditor fees).

Modern Slavery transparency statement

Hydro's Modern slavery transparency statement has been developed to comply with the legal requirements as stated in the UK Modern Slavery Act 2015, valid to Hydro from 2016, and the Australia Modern Slavery Bill 2018, valid to Hydro from 2020. The reporting requirements apply to Hydro as a supplier of goods with a total turnover of £36 million or more in the UK and more than AUD 100 million in Australia. The statement is valid for Norsk Hydro ASA and its consolidated subsidiaries. These include, but are not limited to, the fully-owned production units Hydro Aluminium Deeside Ltd, Hydro Building Systems UK Ltd., Hydro Components UK Ltd and Hydro Extrusion UK Ltd in the UK and the fully-owned holding company Hydro Aluminium Australia Pty Limited in Australia. The latter is the owner of Hydro's 12.4 percent of the shares in the joint venture Tomago Aluminium Smelter and Tomago Aluminium Smelter management company Tomago Aluminium Company Pty.

The Modern slavery transparency statement is prepared based on information collected from all consolidated entities in Hydro. In addition, the above-mentioned legal entities have been consulted on the statement itself.

Entities that are not fully owned by, but are controlled by Hydro, can have different policies. We believe that their relevant policies are aligned with the ones of Hydro.

The UK and Australia Modern Slavery transparency statement is approved by the board of directors of the parent company Norsk Hydro ASA. The statement is included in the board's responsibility statement and included in the Financial Statements and Board of Directors' Report 2018.

Our business and supply chain

Hydro is a fully integrated aluminium company with 36,000 employees in 40 countries on all continents. In addition to production of primary aluminium, rolled and extruded products and recycling, Hydro also extracts bauxite, refines alumina and generates energy to be the only 360° company in the global aluminium industry. Our operations include one of the world's largest bauxite mines and the world's largest alumina refinery, both located in Brazil. We have primary metal production facilities in Europe, Canada, Australia, Brazil and Qatar. Hydro is a large operator of power production in Norway. Extrusion activities are mainly located in Europe and North America, but we also have significant operations in Asia and Brazil. Hydro is present within all market segments for aluminium, with sales and trading activities throughout the value chain serving more than 30,000 customers. Following the Sapa acquisition, Hydro has more than 30,000 active suppliers globally. Most of these are situated in the same countries as our production facilities.

Hydro's supply chain

The figure shows Hydro's supply chain related to its value chain, and does not reflect the current organizational structure.

Our policies and commitments

As a global aluminium company with mining interests, ensuring responsible conduct is important throughout Hydro's value chain. We have to consider our impact on society, spanning from construction to divestment, as well as the exposure to corruption and human rights violations, within our own operations and in the supply chain.

Our compliance system shall ensure that all persons acting on behalf of Hydro comply with applicable laws and regulations and with the requirements adopted by Hydro.

Hydro's corporate social responsibility (CSR) is built on the aspiration of making a positive difference by strengthening our business partners and the local communities where we operate. To do this, we target the fundamental drivers of long-term development. In line with stakeholder expectations and needs, and through strong partnerships, we aim to:

- Contribute to quality education in our communities
- Promote decent work throughout the value and supply chain
- Foster economic growth in our communities
- Strengthen local communities and institutions through capacity building on human rights and good governance

As an employer, owner and purchaser, an important contribution toward respecting human rights is to secure decent working conditions in our organization, in minority-owned companies and with our suppliers. Information pertaining to Hydro's human rights policies and compliance is regularly communicated to the board of directors, the Corporate Management Board, business area management teams, and relevant parties such as union representatives.

We support the principles underlying the Universal Declaration of Human Rights, the UN Global Compact and ILO's eight core conventions. Our human rights policy is based on the UN Guiding Principles on Business and Human Rights, and we report on our adherence in the GRI index. We are a member of the International Council on Mining and

Metals (ICMM) and are committed to following their principles and position statements. We use the GRI Standards for voluntary reporting of sustainable development.

An example of how we work with alleged human rights breaches is from our supply chain. We have been in dialog with a metal supplier, based on alleged human rights breaches, to perform CSR and HSE audits throughout their value chain. As we have been denied access to certain parts, we will terminate the contract unless the supplier alters the decision.

Hydro's supplier requirements regarding corporate responsibility are, as stated in our global directives and procedures, an integral part of all stages of the procurement process. The requirements cover issues related to environment, human rights, anti-corruption and working conditions, including work environment.

The principles laid down in Hydro's Supplier Code of Conduct are made binding through contractual clauses. The requirements demand the supplier to comply with all applicable laws and regulations relating to corruption and bribery, human rights and working conditions and environment to ensure that Hydro's business relationships reflect the values and principles that Hydro promotes internally and externally. The contracts shall include clauses regarding auditing rights and the supplier's responsibility to actively promote the principles set out in Hydro's Supplier Code of Conduct with its own suppliers/contractors and subsuppliers/subcontractors of any tier that have a material contribution to the supply of goods and services to Hydro under the contract.

In 2018, Extruded Solutions rolled out the Supplier Code of Conduct to most new suppliers and made it an integral part of the global terms and conditions of purchase which are part of most purchase order. For legal entities where Hydro holds less than 100 percent of the voting rights, Hydro representatives in the boards of directors shall endeavor to implement the ambitions and principles related to Hydro's global policies including human rights.

Training and capacity building

Leaders and specialists go through training on CSR and human rights on a regular basis. The training is related to Hydro's CSR policy, guidelines and aspirations supporting our business strategy and emphasizing responsible sourcing.

Hydro has also further developed the cooperation with FIEPA (Pará Federation of employers) and REDES (a supplier development network developed by the Industry Federation of Pará), both in Brazil. Together we have organized training for more than 50 local suppliers in 2017 and 2018 and strengthened their competence on HSE, management systems, quality and labor rights. About 3000 employees have been reached so far.

In 2018, we launched the strategic target to contribute to quality education skills development for 500,000 people in our communities and for business partners by the end of 2030.

Risk assessments of human and labor rights

With more than 30,000 active suppliers, Hydro risks being exposed to human rights violations including modern slavery. Human rights are integrated in our business planning, enterprise risk management and follow-up process including relevant key performance indicators. Human rights risks and issues are evaluated in the annual enterprise risk mapping. We also carry out more specific analysis related to operations or certain countries or regions. In addition, our participation in ICMM gives input to our assessments of human rights risks.

We constantly strive to improve our work to identify and mitigate human rights impacts. The latest human rights mapping was done by the Danish Institute on Human Rights (DIHR) in 2017, covering all countries in which Hydro operates (excluding Extruded Solutions). Children's rights related to Hydro's operations in Brazil have been addressed by the Global Child Forum's report "Norsk Hydro Brazil's journey towards social responsibility" published in 2018. The study "Companies in Fragile Contexts: Redefining Social Investment." by Africa Centre for Dispute Settlement, published in 2017, addresses how Hydro can work with human rights impact in fragile contexts.

Rapporten er offentlig tilgjengelig. Det er planlagt en grundig undersøkelse (due diligence) knyttet til menneskerettigheter for Alunorte-raffineriet og Paragominas-gruven i 2019.

Hydro's procedure for integrity risk management of business partners includes suppliers and customers, strategic partners and intermediaries/agents, and sets requirements for integrity due diligence. Implementation is risk-based and takes into consideration contractual value, country risk, etc. With a few exceptions, our business partners shall be risk-assessed prior to entering into a new contract or renewing an existing contract. We consider the risk of incidents of child labor abuse, compulsory or forced labor in our supply chain to be low in the majority of Hydro's own operations. We do, however, recognize a risk of forced or compulsory labor among suppliers in the Middle East, South America and Asia.

Responsible behavior

We recognize that business can have an important role in supporting the fulfillment of human rights. Hydro did not detect any significant breaches of human rights in our own operations in 2018. Some of the measures we pursue to ensure integrity and responsible behavior include:

- Ongoing human rights due diligence, including audits of joint ventures and suppliers
- Continuous stakeholder engagement linked to existing operations and new projects

Through our operations, we contribute to the economic and human development of our employees and the communities in which we operate. We work to ensure informed and effective participation by individuals and groups who are actually or potentially affected by our operations. We respect indigenous peoples' rights, including the right to free, prior and informed consent, and the rights of local communities

when our activities may affect their lands, territories and livelihoods.

An important contribution toward respecting human rights is to secure decent working conditions in our organization and promote the same standards in jointly operated and minority-owned companies, and with our suppliers. In Qatalum, in Qatar, where Hydro holds a 50 percent share, the large majority of employees are migrant workers. Proper working conditions for them is key to us.

We are concerned about fundamental labor rights, such as freedom of association and collective bargaining, minimum wage requirements and the regulation of working hours. We have a long tradition of maintaining a good dialogue with employee organizations. Hydro's major sites in Europe and Brazil are unionized. Extruded Solutions has a major presence in the USA, and 60 percent of our US employees are working at unionized sites. We have activities in countries where trade unions are restricted, where we look for alternative forums to empower employees. Hydro's Global Framework Agreement was last updated in 2016 and has been extended through the end of 2019. The agreement aims at creating an open channel of information between the parties about industrial relation issues in order to continuously improve and develop good work practices in our worldwide operations.

In addition, we establish or facilitate access to effective grievance mechanisms for individuals and groups that may be affected by our operations.

Suppliers, customers and other business partners registered in our main accounting systems (except Extruded Solutions) are screened on a weekly basis against recognized international sanction lists. Extruded Solutions has implemented the Integrity Risk Management process for all its suppliers in 2018. Regular sanctions screening will start in 2019. Furthermore, supplier audits and site visits are performed by Hydro personnel and external auditors based on risk analysis.

Excluding Extruded Solutions, Hydro performed 83 supplier audits in 2018. All but four of these audits included HSE and CSR-related topics. In Extruded Solutions, we performed 262 supplier audits. Our approach to audit findings is to correct and act in a transparent manner, learning and implementing corrective actions. We are in particular concerned about corrective actions in relation to possible child, forced or compulsory labor.

Security guards are employed on a regular basis to protect our personnel and assets. No armed guards were engaged in our activities in 2018, and there were no significant incidents reported in connection with the use of security guards. Hydro is committed to the Voluntary Principles on Security and Human Rights.

Our compliance system is based on prevention, detection, reporting and responding. Information pertaining to Hydro's human rights, policies and compliance is regularly communicated to the board of directors, the Corporate Management Board, business area management teams, and other relevant parties, including union representatives.

All documents listed under References below are also valid for all our subsidiaries subject to the UK Modern Slavery Act and the Australia Modern Slavery Bill.

References

A number of Hydro's steering documents are relevant for our work against modern slavery. These include, but are not limited to:

- NHC-CD07 Hydro's Code of Conduct
- GD02 Hydro's People Directive
- GD03 Health, Security, Safety and Environment
- GD09 Hydro's Social Responsibility
- GP09-01 Corporate Social Responsibility in the supply chain
- GP09-01 Hydro's Supplier Code of Conduct
- GP09-03 Hydro's Human Rights Policy
- The Hydro Integrity Program Handbook

All documents are available at www.hydro.com/principles

Additional information

Terms and definitions

ADRs	American Depositary Receipts, evidencing a specified number of ADSs
ADSs	American Depositary Shares, each ADS representing one deposited ordinary share
Alunorf	Aluminium Norf GmbH
Alunorte	The world's largest Alumina refinery outside China, situated in Barcarena in Northern Brazil. Hydro owns 92 percent
AMPS	Aluminium Metal Production System. Hydro's best practice system and standard for world-class production and improvement in our primary metal business
Articles of Association	The articles of association of the Company, as amended and currently in effect
Audit Committee	The audit committee of the Company's Board of Directors
BABS	Bauxite & Alumina's best practice system, based on AMPS (see above) and adjusted to B&A needs
BAT	Best Available Techniques for pollution prevention and control
B&A	Hydro's Bauxite & Alumina business area
CO2 equivalents (CO2e)	A measure used to compare the emissions from various greenhouse gases based upon their global warming potential
Code	The U.S. Internal Revenue Code of 1986, as amended
Company	Norsk Hydro ASA, a Norwegian public company limited by shares, or Norsk Hydro ASA and its consolidated subsidiaries, as the context requires
Compensation Committee	The compensation committee of the Company's Board of Directors
Consolidated Financial Statements	The consolidated financial statements and notes included in the Company's annual report to shareholders
Corporate Assembly	The corporate assembly, a body contemplated by Norwegian companies' law, with responsibility, among other things, for the election of the members of the Company's Board of Directors and nomination of the external auditor
Corporate Management Board	The corporate management board established by the Company's President and Chief Executive Officer to assist him in discharging his responsibilities
CRU	CRU International Limited
CSR	Corporate Social Responsibility
Disclosure Committee	The disclosure committee of the Company, comprised of members of senior management, which is responsible for reviewing financial and extra-financial information before it is made public
DRS1	The old bauxite residue deposit area at Alunorte, still being used to deposit bauxite residue, processed by state-of-the-art press filters
DRS2	The new bauxite residue deposit area at Alunorte, which was under commissioning when Barcarena was flooded following extreme rainfalls in February 2018
EEA	European Economic Area
EEA Agreement	The European Economic Area Agreement
EFTA	European Free Trade Association
EU	European Union
GHG	Greenhouse gas emissions
GRI Standards	Globally recognized standards for sustainability reporting
HSE	Health, security, safety and environment
Hydro	Norsk Hydro ASA and its consolidated subsidiaries
Hydro Aluminium	The aluminium business of Hydro, comprising the sub-segments Metals, Rolled Products, and Extrusion and Automotive
Hydro Monitor	Hydro's global employee engagement survey, normally performed for all employees every second year
Ibama	Brazilian Institute of the Environment and Renewable Natural Resources is a federal environmental agency under the Ministry of Environment
ILO	International Labor Organization
Industry 4.0	An initiative within Primary Metal focusing on advanced analytics, automation, robotics, and digital and predictive maintenance.
kWh	Kilowatt hour
LME	London Metal Exchange
mm	Millimeter
Mt (or mt)	Metric tonne (1,000 kilograms)
My Way	The process we use at Hydro for employee feedback and development. This process consists of regular dialogues between employee and leader, as well as a system tool.
NOK	Norwegian kroner
Nomination Committee	The nomination committee provided for in the Company's Articles of Association and operating under a charter established by the shareholders' representatives in the Corporate Assembly
OSE	Oslo Stock Exchange
Semas	The Secretary of State for Environment and Sustainability is the environmental agency in the state of Pará
TAC	"Term of Adjustment of Conduct" is an agreement between Alunorte, Ministério Público and the Government of Pará/Semas and regulates certain technical studies and improvements, audits, payments of fines, and payments for food cards to families living in the hydrographic area of the Murucupi river
TC	"Term of Commitment" is a social agreement, in addition to TAC, between Alunorte and the Government of Pará. The agreement addresses efforts and investments related to the social development of communities in Barcarena

tonne, mt	One metric tonne (1,000 kilograms or 2,205 pounds)
TWh	Terawatt hour (one billion kilowatt hours)
US GAAP	Generally accepted accounting principles in the United States
VAW	VAW Aluminium AG
VPS or VPS System	The Norwegian Central Securities Depository, Verdipapirsentralen
Workers	Person that performs work directly or indirectly for the company. It includes, but is not limited to, employees
WTO	World Trade Organization
Yara	Yara International ASA

Cautionary note

Certain statements included in this announcement contain forward-looking information, including, without limitation, information relating to (a) forecasts, projections and estimates, (b) statements of Hydro management concerning plans, objectives and strategies, such as planned expansions, investments, divestments, curtailments or other projects, (c) targeted production volumes and costs, capacities or rates, start-up costs, cost reductions and profit objectives, (d) various expectations about future developments in Hydro's markets, particularly prices, supply and demand and competition, (e) results of operations, (f) margins, (g) growth rates, (h) risk management, and (i) qualified statements such as "expected", "scheduled", "targeted", "planned", "proposed", "intended" or similar.

Although we believe that the expectations reflected in such forward-looking statements are reasonable, these forward-looking statements are based on a number of assumptions and forecasts that, by their nature, involve risk and uncertainty. Various factors could cause our actual results to differ materially from those projected in a forward-looking statement or affect the extent to which a particular projection is realized. Factors that could cause these differences include, but are not limited to: our continued ability to reposition and restructure our upstream and downstream businesses; changes in availability and cost of energy and raw materials; global supply and demand for aluminium and aluminium products; world economic growth, including rates of inflation and industrial production; changes in the relative value of currencies and the value of commodity contracts; trends in Hydro's key markets and competition; and legislative, regulatory and political factors.

No assurance can be given that such expectations will prove to have been correct. Hydro disclaims any obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

Hydro

We are aluminium

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Hydro is a fully integrated aluminium company with 35,000 employees in 40 countries on all continents, combining local expertise, worldwide reach and unmatched capabilities in R&D. In addition to production of primary aluminium, rolled and extruded products and recycling, Hydro also extracts bauxite, refines alumina and generates energy to be the only 360° company of the global aluminium industry. Hydro is present within all market segments for aluminium, with sales and trading activities throughout the value chain serving more than 30,000 customers. Based in Norway and rooted in more than a century of experience in renewable energy, technology and innovation, Hydro is committed to strengthening the viability of its customers and communities, shaping a sustainable future through innovative aluminium solutions.