



Sustainability report for Hydro's operations in Brazil 2018



About the report

This sustainability report includes Hydro's operations in Brazil in 2018. Information about certain subsequent events up till September 20, 2019 has also been included.

The main report consists of "Our approach", describing our policies, strategy and main results within environmental and social topics, "Case stories" presents examples of how we apply our approach to sustainability and "The Alunorte Situation" describing the events and actions following the flooding in the Barcarena region in February 2018. In addition, more detailed underlying information is included in the Environmental and Social statements. Also available is a Country by country report for Hydro's global organization which is prepared according to Norwegian legal requirements due to Hydro's extractive activities in Brazil. This report also fulfills the requirements of the Extractive Industries Transparency Initiative (EITI).

The two principal sections in the report, "Our approach" and "Environmental and social statements", have been prepared mainly based on information provided in Hydro's Annual Report 2018, specifically the "Viability performance" and "Viability performance statements" sections, which have been subject to limited assurance by our external auditor KPMG. The country by country report has also been subject to limited assurance by KPMG and has been approved by Hydro's Board of Directors.

The report is prepared in accordance with the GRI Standards and is self-declared to be in accordance with the "Core" option as described by GRI 101 (2016). The GRI index is available at www.hydro.com/gri

Throughout the report, Hydro refers to Norsk Hydro ASA and its consolidated subsidiaries in Brazil if not otherwise stated. The report is available at www.hydro.com in Portuguese and English.

Key developments Alunorte – 2018 and onwards

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, starting already before the rainfall, 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 federal court in Belem, Brazil, lifted the production embargo on the Alunorte alumina refinery under the criminal lawsuit on Monday, May 20, 2019, allowing Alunorte to ramp up towards normal production after running at half capacity for more than a year. On September 20, 2019, The Federal Court of Pará lifted the embargo on Alunorte's new bauxite residue disposal (DRS2) under the civil lawsuit. At the time of the publication of this report Alunorte is still subject to an embargo on DRS2 imposed by the same court in a parallel criminal lawsuit, on which a decision is expected shortly.

In 2018 and until the publication of this report, Hydro has initiated several measures:

- Sustainable Barcarena Initiative was established, to support broad collaboration for social change
- 50 percent increase in water treatment plant and 350 percent increase in water holding ponds capacity
- All bauxite residue is handled by the new press-filter technology, reducing moisture content to 22 percent, down from 36 percent
- Heavy rainfalls in April, 2019 confirm the integrity of Alunorte's new rainwater system

Other key developments Hydro in Brazil 2018

- Hydro acquires the extrusion plants Tubarão and Utinga from Arconic in April 2018
- TRI 1.8 for employees and contractors combined for 2018 (total recordable injuries rate per million hours worked)
- Hydro's global organization comes under cyberattack March 19, 2019
- Hydro Bauxite & Alumina, including Alunorte and Paragominas, becomes certified according to the Aluminium Stewardship Initiative standards in May 2019, as the first company in Brazil

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Hydro in brief 2018

Valid to Hydro's consolidated worldwide operations. Most of the figures are impacted by the Alunorte embargo.



46,700

36,200 own employees
10,500 contractors
(full time equivalents)



3.4

Total recordable
injuries per million
hours worked



47.75B BRL

Non-current assets



1.45B BRL

Income taxes paid



9.72M CO₂e

Greenhouse gas
emissions



46 TWh

Energy consumption



2,116' tons

Tailings deposited by
Paragominas



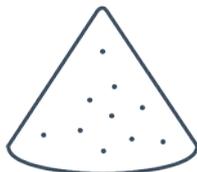
3,191' tons

Bauxite residue
deposited by Alunorte



6,214' mt

Bauxite production



3,712' mt

Alumina production



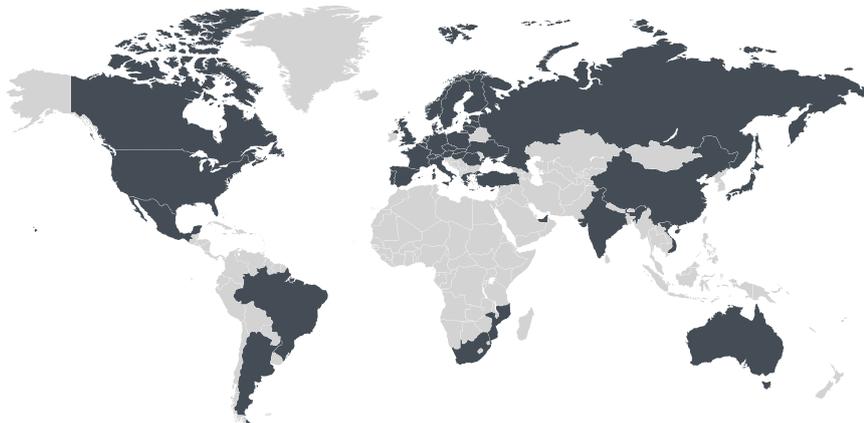
1,653' mt

Primary metal
production



1,396' mt

Extrusion sales
volume to external
market



Hydro is a fully integrated aluminium company with 36,000 employees in 40 countries on all continents, combining local expertise, worldwide reach and unmatched capabilities in R&D

Hydro Brazil in brief 2018

The figures are valid to Hydro's consolidated operations in Brazil. Most of the figures are impacted by the Alunorte embargo.



13,700

5,700 own employees
8,000 contractors (full time equivalents)



1.8

Total recordable injuries per million hours worked



15.44B BRL

Non-current assets



0.67B BRL

Taxes and fees paid



4.1M CO₂e

Greenhouse gas emissions



15 TWh

Energy consumption



2,116' tons

Tailings deposited by Paragominas



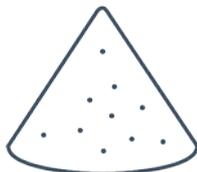
3,191' tons

Bauxite residue deposited by Alunorte



6,214' mt

Bauxite production



3,712' mt

Alumina production



308' mt

Primary metal production



38' mt

Extrusion sales volume to external market



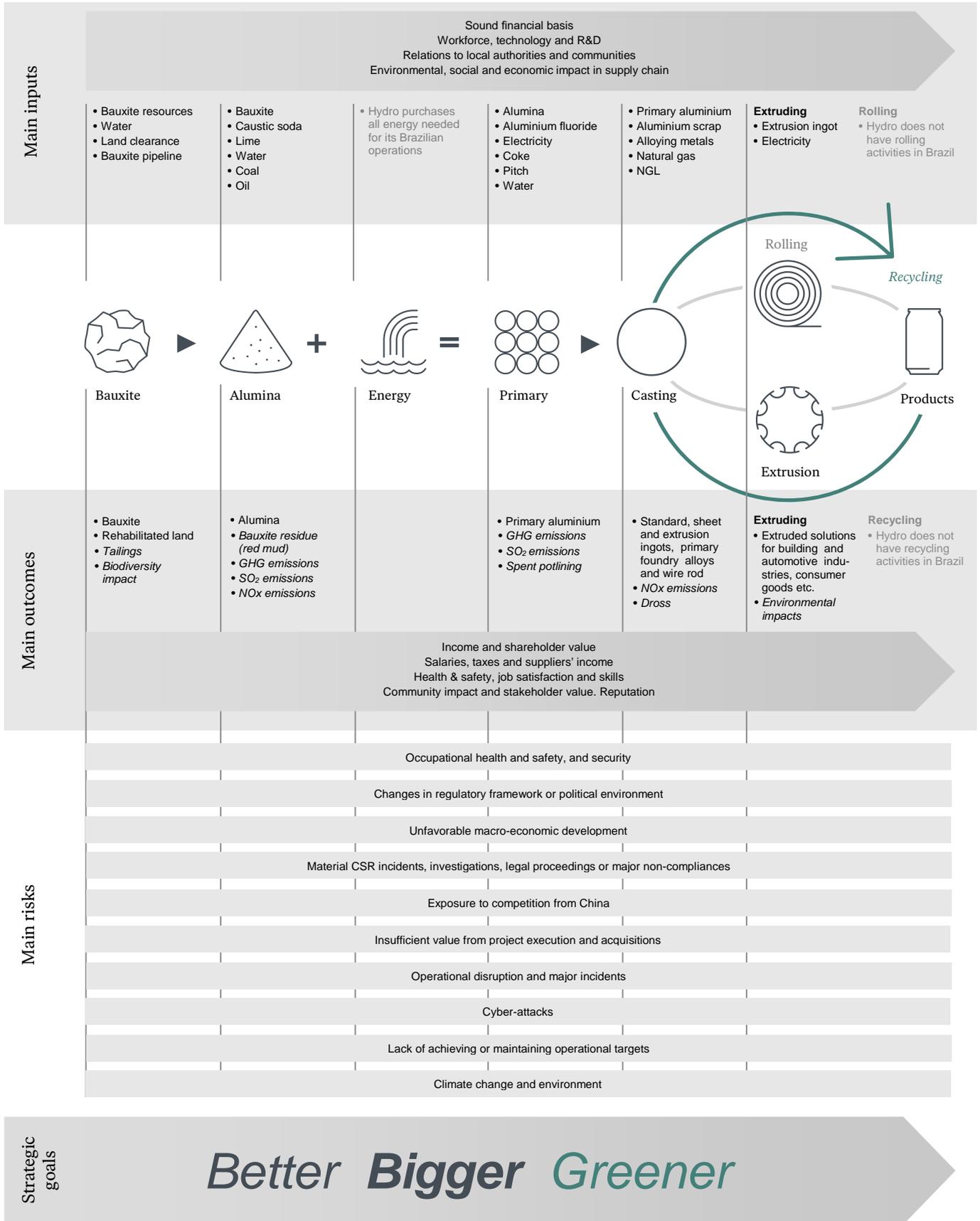
In Brazil we have operations throughout the value chain

This includes all the way from bauxite mining to finished extruded aluminium products and solutions.

The majority of our assets and employees are located in the state of Pará in northern Brazil. In southern Brazil we have three extrusion plants, in addition to sales offices and administrative positions.

- Bauxite & Alumina facility
- Extrusion plant
- Administrative/Sales office
- Aluminium production facility

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 the Risk Review chapter in Hydro's Annual Report 2018. Text in *italics* reflects mainly negative impacts.

Hydro's mid-term strategic goals

	Ambitions	Medium-term target	Timeframe	2019 target	2018 target	2018 progress	Status
<i>Better</i>	Improve safety performance, strive for injury free environment	TRI <2	2020	TRI 1.7 ¹⁾ TRI < 2.7 ²⁾	TRI 1.7 ¹⁾ TRI < 3.0 ²⁾	TRI 1.7 ¹⁾ TRI 1.9 ²⁾	●
	Hydro scores in the top 25 percent on the Employee Engagement index in Hydro Monitor	Top 25 percent	2020	Top 25 percent	Top 25 percent	Top 25 percent	●
	All employees participate in the people performance and development process My Way	90 percent	2020	92 percent	95 percent	96 percent	●
	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	●
	Maintain zero tolerance on corruption	No instance of corruption	Long-term	No instance of corruption	No instance of corruption	No registered instances of corruption	●
				Revise Hydro's Code of Conduct	Completed	●	
			Completion of Code of Conduct e-learning by 90% of staff employees	Strengthen compliance awareness in operations. Provide data privacy training	Completed	●	
<i>Bigger</i>							
<i>Greener</i>	Become carbon-neutral from a life-cycle perspective	Zero	2020	Establish climate strategy towards 2030	Review climate risk analysis	On track	●
	Deliver on reforestation ambition	1:1	Continuous	1:1	1:1	On track ³⁾	●
	Deliver on reforestation ambition	Eliminate historical rehabilitation gap	2020		Continous process	Completed, historical gap closed	●
	Making a positive difference	Contribute to quality education and capacity building for 500.000 ⁴⁾	2030	Implement reporting methodology to track progress	Develop and test reporting system	On track	●
		Supplier development within HSE and human rights issues	Long-term	Develop and test new solution to initiate and track improvements	Identifying improvement needs in existing supplier management systems	On track	●

1) Relates to Bauxite & Alumina.

2) Relates to Hydro's consolidated operations in Brazil. There is no specific target for Hydro's consolidated operations in Brazil, and the targets are the same as for Hydro's global operations.

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) While this is a global target, Hydro's operations in Brazil will be a significant contributor to reaching the target.

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

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

13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



Making a positive difference

4 QUALITY EDUCATION



8 DECENT WORK AND ECONOMIC GROWTH



16 PEACE, JUSTICE AND STRONG INSTITUTIONS



Driving innovation

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



The quest for sustainable metal & mining

In Hydro, we are more than open and willing to talk about the many benefits of aluminium in use. However, the infinite opportunities of “the metal of the future” do not mean that we can allow ourselves to underestimate the challenges related to producing aluminium.

And we don't. This Sustainability Report for Hydro's Operations in Brazil may serve as an example. Similar information is published in Hydro's Annual report every year.

As an open and transparent aluminium producer, engaged throughout the entire aluminium value chain, we should be, and want to be, equally open about the environmental impact of producing aluminium, including its raw materials – like bauxite, alumina and energy – as we are about its positive contributions to society.

Minimize impact, maximize benefits

We want to face our challenges by being transparent about our issues – such as the flooding of Barcarena in February 2018. Driving the technology shift in the industry, working to improve our relationship with stakeholders to enable collaboration, and dedicating efforts to become a closer and better neighbor to those living near our plants are all a part of this.

Our aim is to maximize the positive benefits of aluminium and to minimize the negative impact from producing it and invite to continuous dialog and collaboration on how to make sure that bauxite, alumina and aluminium from Hydro is produced responsibly and used sustainably.

The environmental impact is largest in the initial steps of the value-chain. In bauxite mining we have to remove trees and a soil layer in order to access the bauxite. In Paragominas, most of the areas we mine have been partly or fully logged before, some 40 years ago. Our commitment – and obligation – is to rehabilitate the mined areas into new forest and do it in a way that enables as rich biodiversity as possible for the decades and centuries to come.

To help us accomplish that and improve rehabilitation methods to restore tropical forests, we support the Biodiversity Research Consortium Brazil-Norway (BRC), established in 2013, uniting five Brazilian and Norwegian institutions in a collaboration to develop environmental research in the eastern Brazilian Amazon.

New, safer, space-saving technology in bauxite residue storage

At Alunorte the bauxite is separated in alumina and other minerals. The part that is not turned into alumina is long-term stored as bauxite residue. Hydro has made further improvements in dry stacking, considered to be the best available technology for residue deposit areas. The press filters used in Alunorte significantly reduce the moisture of the bauxite residue and enable compaction. This reduces the relative area needed for storage and further increase the safety of the deposits.

Social responsibility and open-door policy

Hydro can only succeed as a company if the communities around us also succeed. This is an important learning from the Alunorte situation – we must be a good neighbor to local communities surrounding our operations.

We have opened our doors to our neighbors, to the families of our employees and universities. More than 1,000 people visited our plants during the first half of 2019.

Hydro's program "Volunteers in Action" makes us proud. It supports activities and projects related to environment, education, health, citizenship and income generation in Paragominas and Barcarena. Among other initiatives, hundreds of volunteers from Alunorte and Albras, and their families, work together to revitalize public spaces, such as sports courts in several communities in Barcarena, benefiting thousands of families who can use the areas for sports practice and cultural activities. All such initiatives build as a minimum on dialog with those directly affected as well as local authorities.

We take private community investments seriously. We have been contributing to the development of projects that are critical to strengthening agriculture, a fundamental activity for the economy of Barcarena municipality, like the Ativa Barcarena program and the Amesa project described in this report.

In addition, we have committed to invest in social projects and capacity building through the Sustainable Barcarena Initiative over the next 10 years.

We want to ensure responsible operations and social development in the communities around us.

The metal of the future

Aluminium is a key building block for the low-carbon, circular economy. The alumina we produce in Pará goes to many customers around the world, including our industrial-scale Karmøy technology pilot in Norway where new technology enables us to produce the world's most climate and energy-efficient primary aluminium. More and more of our aluminium, much of it with its origin in Paragominas and Alunorte, is used in automotive applications, light-weighting transportation and reducing carbon emissions in the use phase.

We have achieved a number of certifications from the Aluminium Stewardship Initiative's (ASI) standards for sustainability performance, including at our Paragominas bauxite mine and our Alunorte alumina refinery. We feel that we are on the right track and that we should use this momentum to do more and achieve more to improve the total footprint of everything we produce, by minimizing impact and maximizing benefits.

Through this sustainability report, we inform about the impact we have and what we do to improve – on climate, on environment and on social responsibility – and we want to be measured by our ability to improve further in the years to come.



A handwritten signature in black ink that reads "John G Thuestad". The signature is written in a cursive, flowing style.

John Thuestad
Hydro's Executive vice-president for Bauxite & Alumina

Our approach

- 12 The Hydro Way
- 14 Energy and climate change
- 15 Resource management
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- 24 Organization and work environment
- 27 Innovation and design thinking

Quick overview

This chapter includes relevant information related to Hydro's approach to environmental and social performance.

More quantitative information is included in the Environmental and social statements.

The information is based on Hydro's global reporting in the Annual Report 2018 which has undergone limited assurance by our external auditor KPMG.

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

The Hydro Way

The Hydro Way is our approach to business. It's an approach that has lived within Hydro since its foundation in 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. Some of these are publicly available at www.hydro.com/principles

Our overall approach to social, environmental and governance issues is integrated in Hydro's overall business strategy. In addition, we have specific support strategies e.g. on climate change, environment and CSR - 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

This section has been prepared mainly based on information provided in Hydro's Annual Report 2018, specifically the Viability performance and Viability performance statements, which have been subject to limited assurance by our external auditor KPMG.

We use the GRI Standard 101 (2016) in defining which topics and indicators that are material to report upon. The analysis is based on GRI methodology as well as Hydro's overall materiality analysis for 2018; a materiality analysis for Hydro in Brazil prepared by the consultancy ERM in 2017; and the enterprise risk management analysis for B&A for 2018. Based on these, the materiality analysis has been developed in close collaboration with representatives from Hydro's business areas in Brazil, and by using their knowledge of our continuous stakeholder dialogue. Please see page 21.

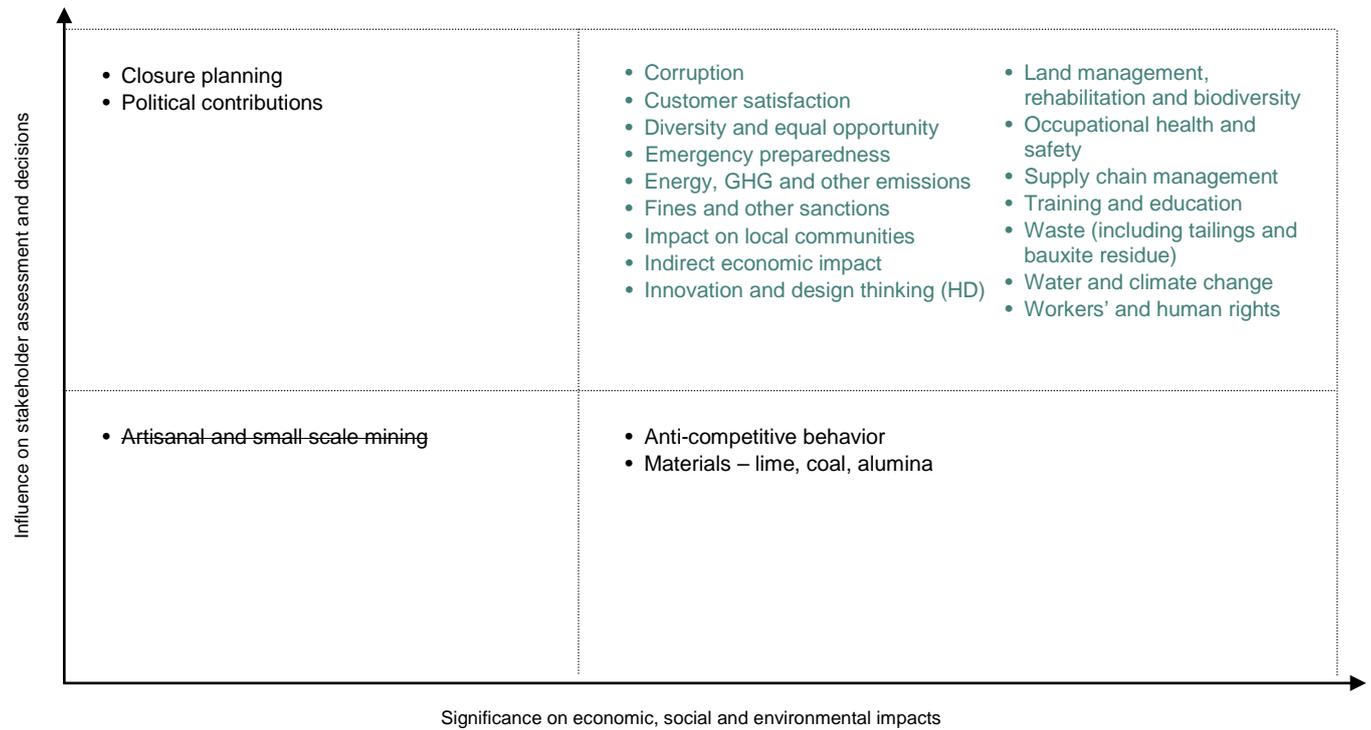
The material topics are reported throughout this report Hydro's GRI index for Brazil at www.hydro.com/gri

The information has been reviewed by a steering committee consisting of the most relevant senior specialists in Brazil and Hydro globally and finally approved by Executive Vice President and Head of Bauxite & Alumina, John Tuestad, and Executive Vice President and Head of Communication & Public Affairs, Inger Sethov. The board of directors of the parent company Norsk Hydro ASA has approved the country-by-country report. Read more about our reporting principles and materiality process on page 49.

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, the UN Sustainable Development Goals and UN Guiding Principles on Business and Human Rights - and shows how the different frameworks connect with each other.

Materiality analysis 2018 – Hydro in Brazil

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 Executive Vice President and Head of Bauxite & Alumina, John Tuestad, and Executive Vice President and Head of Communication & Public Affairs, Inger Sethov. The green topics represent those that are most material to Hydro in Brazil, 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

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.



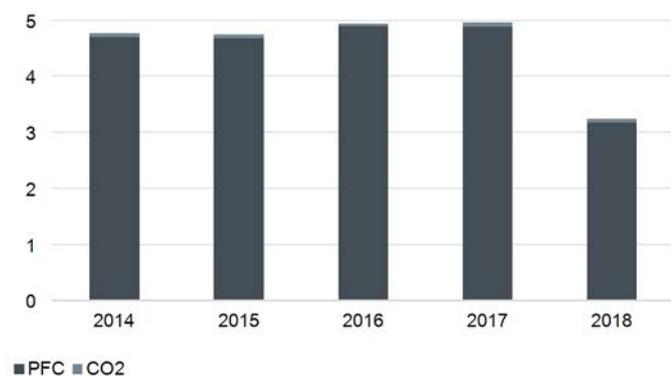
Climate change

Hydro's global ambition is to be carbon-neutral in a life-cycle perspective by 2020. Hydro in Brazil plays an important role in fulfilling this target. 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.

Direct greenhouse gas emissions from Hydro's consolidated activities in Brazil

Million mt CO₂e



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

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) for Hydro's global activities 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 was not carbon neutral in 2018. Hydro is, however, still on track towards being carbon neutral in a life-cycle perspective in 2020. This is dependent on and will be achieved by:

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

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. Alunorte is among the most energy efficient alumina refineries in the world.

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

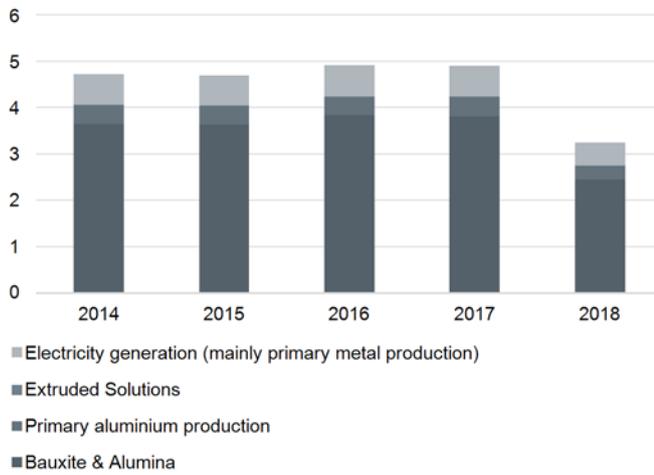
Investing in the accuracy of greenhouse gas emissions inventory, Albras has for the second consecutive year received the gold certification of the Brazilian GHG Protocol program. This is the largest database of corporate inventories in Latin America and is based on third-party certifications.

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 80 for more information.

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.

Greenhouse gas emissions from Hydro's ownership equity in Brazil

Million metric tons CO2e



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

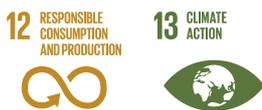
Increasing recycling of aluminium

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, mainly in Europe and USA. We remelt process scrap from our own production and from other companies, as well as post-consumer scrap from the market. Currently, Hydro does not have recycling facilities in Brazil.

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.



Hydro is an active member of the Aluminium Stewardship Initiative and has started certification of its value chain. In May 2019, Hydro's Bauxite & Alumina business area, including the bauxite mine in Paragominas and the alumina refinery Alunorte, became ASI certified as the first company in Brazil, see page 78.

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 our activities in Pará. Hydro has primary aluminium production at Albras, in Barcarena in the state of Pará in northern Brazil.

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.

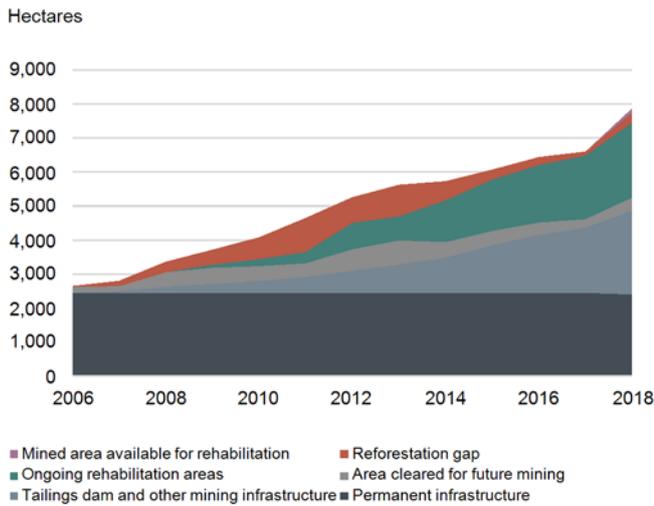
Ecosystems and biodiversity



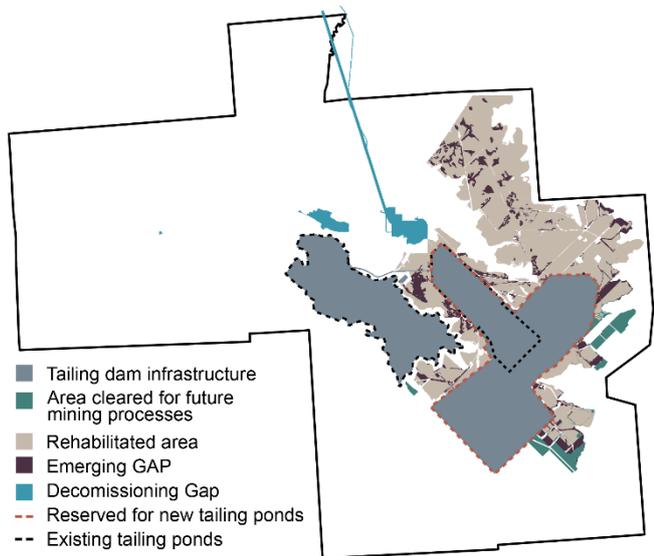
When developing new projects, we perform an environmental risk analysis as part of our impact assessment, following internationally recognized guidelines (e.g. International Finance Corporation) and identify mitigating actions that will facilitate our ambition of achieving no net loss of biodiversity. This is an area under development internationally, and we participate in the Cross Sector Biodiversity Initiative (CSBI), which is a joint effort between ICM (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.

Land use and rehabilitation - Paragominas



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 22.

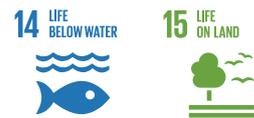
Since 2013, Hydro has used the nucleation method in Paragominas for rehabilitation. Topsoil is unevenly distributed to simulate natural landscape and trap rainwater.

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.

Two new insect species have been recorded by the Hydro-supported biodiversity project in the Amazon; one parasitic wasp and a true bug that lives inside rotten wood. The research project is part of Hydro's work in Brazil with reforestation after bauxite mining.

Water

Our main impact on waterways comes as a result of discharges to external water bodies. 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 The World Business Council for Sustainable Development (WBCSD) global water tool to perform an annual review of water withdrawal from water-stressed areas. According to the definition by WBCSD, Hydro's sites in Brazil are not located in water stressed areas.

In 2017, Hydro developed a basic water risk analysis tool, covering water use and discharge, to be applied across key operations. The material risks are linked to the management of excess water and the quality of the external bodies into which Hydro discharges process water. For information about our measures to upgrade the water treatment capacity at Alunorte, see page 34 and 41.

Our alumina refinery Alunorte obtains an important part of its water supply through the bauxite slurry that is transported from the Paragominas bauxite mine by pipeline. Paragominas' and Alunorte's water use is close to their current regulatory limits. To learn more, see note E4.2 to the environmental statements.

Waste and efficient resource use



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.

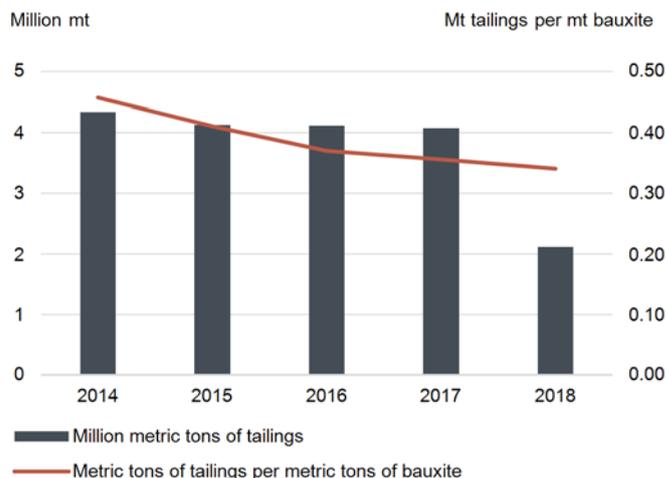
Bauxite residue, also known as red mud, is a by-product of the alumina refining process. Its disposal is challenging due to large volumes and the alkaline nature of the liquid component of the residue. The residue is washed with water to lower the alkalinity and to recover caustic soda for reuse. Hydro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

Since October 2018, all bauxite residue at Alunorte is handled by the press filters. We are also working to develop alternative use of bauxite residue, please see 27 and 37.

The dams and deposits are frequently inspected by Hydro and Brazilian authorities, and are also subject to inspection by e.g. Geomecnica and the Norwegian Geotechnical Institute (NGI). 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

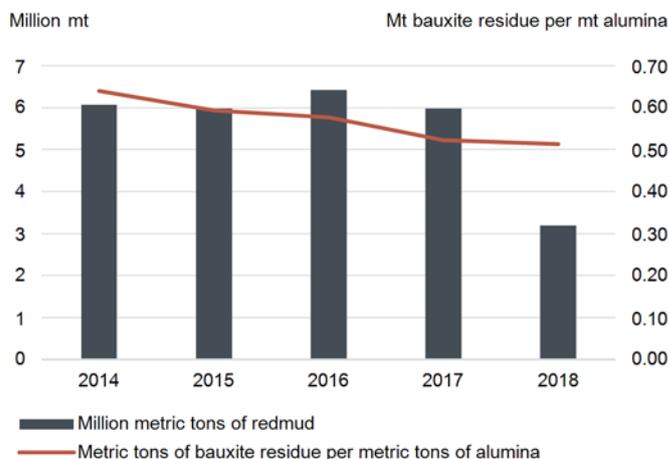
regulatory requirements is crucial for Hydro. The Paragominas dams are stable and regularly monitored and audited by external experts. The dams meet all parameters of current environmental and mining legislation.

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.

Hydro is also a 5 percent shareholder in Mineração Rio do Norte (MRN)¹, 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.

Detailed information about the tailings dams in Paragominas and MRN is publicly available at www.hydro.com in accordance with The Church of England Pension Board and

¹ Hydro has a five percent ownership interest and off-take agreements with Vale for a further 40 percent of the volume produced by MRN.

Swedish Council on Ethics tailings disclosure request. To read more about the update of our water management system at Alunorte, please see page 34.

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 starting on page 41.

Other waste

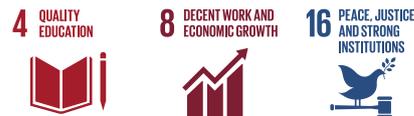
Spent potlining (SPL) – or anode waste – from the electrolysis cells used in primary aluminium production is defined as hazardous waste. The production of SPL varies with the relining of smelter cells, which is normally done every 4-7 years for established aluminium plants. For information about SPL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

Albras has a significant stock of SPL. This is being reduced according to the annual plan and target, and being delivered as a raw material to the cement industry in Brazil. This agreement is an example of efficient and safe resource use that is sound for the environment by substituting fuel or raw materials while reducing landfill and saving landfill costs. Since 2016, Albras has reduced its stock of dross from 1,319 to 36 metric tons. In September 2018, the plant also implemented a program to reduce generation of this hazardous waste based on process control. Promising results have been achieved since the start-up.

Following a mass balance of mercury at Alunorte, which was concluded in 2017, Hydro decided to install four mercury condensers on the digester 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.

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.



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 have zero tolerance towards corruption and are committed to comply with Brazilian and international anti-corruption regulations. In 2018, we signed the Pact for Integrity and have – through the parent company in Norway – a long-term relationship with Transparency International. In 2019, we have further strengthened our relationship with Instituto Ethos by becoming an associate partner. Hydro's global compliance department reports to the Board of Directors through its audit committee and has representatives in Brazil.

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.

Starting in 2020, 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.

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.

All cases reported through the AlertLine were investigated in 2018. In total four persons were dismissed in our Brazilian operations during the year as a result of reported breaches, 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 a department in Brazil, with presence in Rio de Janeiro and Belém, being responsible for audits and investigations in South America.

For more information about Hydro's performance on compliance, see note S10 to the Social statements in this report.

Transparency

Transparency is key to creating a global level playing field as well as to safeguard 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 83. The report has been approved by Hydro's board of directors.

For information about collaboration with civil society, see Partnership section on page 22.

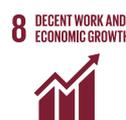
Respecting human rights

Hydro is committed to respecting and supporting fundamental human rights. We acknowledge our role in upholding basic values inherent to every human being; values which enable the building of a more just and democratic society. We are guided by all internationally recognized human rights and labor standards, and as a minimum, those contained in the International Bill of Human Rights and the ILO Declaration on Fundamental Principles and Rights at Work, also known as ILO's eight core conventions, as well as

ILO 169 on indigenous and tribal peoples' rights. We also strive to align our practices with the requirements of the International Finance Corporation, The World Bank and local legislation.

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. Hydro's policy on human rights is publicly available at www.hydro.com/principles

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



In 2014, the Danish Institute for Human Rights (DIHR) performed an assessment of Hydro's operations in Brazil. In 2017, DIHR performed a comprehensive mapping of Hydro's human rights risks (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 Hydro's operations in Pará, Brazil, is being performed in 2019.

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 later in this report. For other examples on how we work with these issues, see page 32 on community relations and 38 on how we develop our suppliers.

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 to these disputes. 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 in the proximity of 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 MRN² 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.

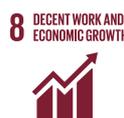
Grievance mechanisms

Grievance mechanisms are important to protect the rights of individuals and groups affected by our operations.

In Brazil, our 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's Brazilian operations have more than 2,000 active suppliers. Most are located in Brazil.



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 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 sub-suppliers/subcontractors of any tier that have a material contribution to the supply of goods and services to Hydro under the contract.

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.

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.

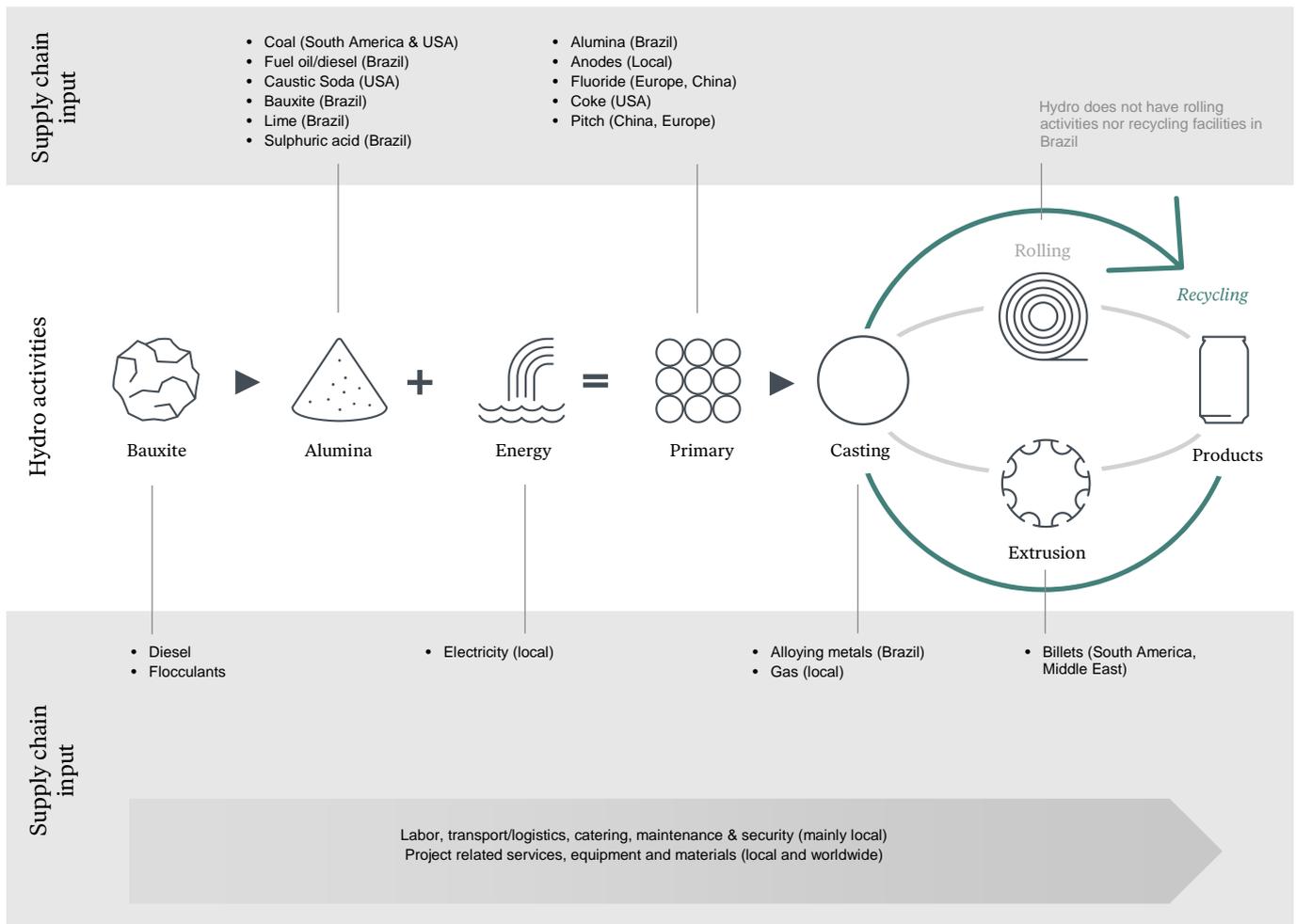
Suppliers, customers and other business partners registered in our main accounting systems (except Extruded Solutions) are screened on a weekly basis against recognized international sanction lists. Extruded Solutions has implemented the Integrity Risk Management process for a majority of its suppliers 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 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 79 for more information.

² Hydro has a 5 percent ownership interest and off-take agreements with Vale for a further 40 percent of the volume produced by MRN.

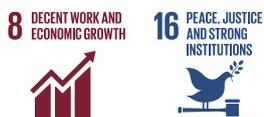
Hydro's supply chain



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.



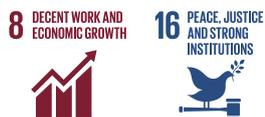
Hydro's acquisition of Arconic's two extrusion plants in Brazil, with more than 600 employees, was completed in April 2018.

For information about the Alunorte situation, see page 41.

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 the International Finance Corporation and UN Guiding Principles on Business and Human Rights. This includes the principle of free, prior and informed consent when indigenous peoples are involved.



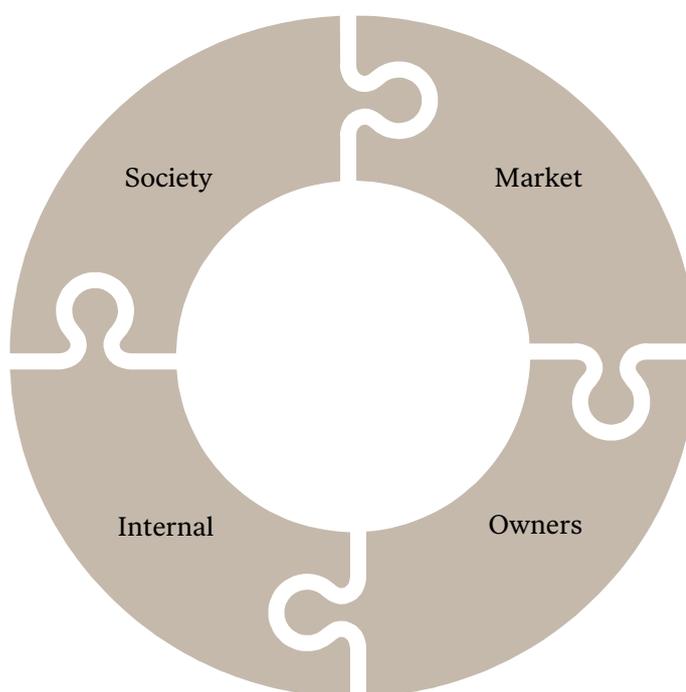
Dialogue with the employees' representatives includes involvement at an early stage in all major processes affecting employees, and we have a tradition for open and successful collaboration between management and unions.

Since 2018, Hydro has had a forum for dialogue between the management and union representatives in Brazil, including all operating sites. 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 page 41.

Stakeholder mapping in Hydro

- Academia
 - Authorities
 - Industry associations
 - Lobby groups
 - Local communities
 - Media
 - National and international unions
 - NGOs
 - Politicians
 - Public offices
 - R&D funding bodies
-
- Board of Directors
 - Corporate Assembly
 - Employee representatives
 - Employees



- Commodity and stock exchanges
 - Competitors
 - Customers
 - End users
 - Insurers and banks
 - Partners/joint ventures
 - Suppliers
 - Other business relations
-
- 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 is a long-standing corporate

member of Transparency International (TI) and participates regularly in seminars with TI and by providing content to TI publications. 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. In 2019, we further strengthened our relationship with Instituto Ethos by becoming an associate partner. Hydro is also a signatory to the World Economic Forum's Partnering Against Corruption Initiative (PACI).

Hydro has collaborated with the Danish Institute for Human Rights since 2011.

In addition, we collaborate 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

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 Brazil. 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, the Brazilian Aluminium Association, the World Business Council for Sustainable Development, and more, see GRI Standards 102-12 and 102-13 at www.hydro.com/gri

Most resources are dedicated to advocacy activities through business associations, and direct dialogue with authorities and decision makers. Among concrete activities in 2018 was follow-up of the regulatory framework on ICMS tax in the state of Pará, see page 85, and the renewal of the port lease agreement in Barcarena. Following the embargos imposed on Alunorte in 2018, Hydro has actively collaborated with Brazilian authorities to resume normal operations at the

alumina refinery. For more information, please see The Alunorte situation section later in this report.

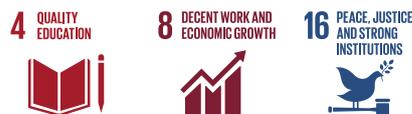
Hydro supports the principles of free trade and open market, and efforts to create a global level playing field. In addition, in our advocacy we support the climate targets set in the Paris Agreement.

For information on spending on public affairs and lobbying, see note S12 to the Social 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 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, Hydro 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. While this is a global target, our operations in Brazil will be a significant contributor to the target.

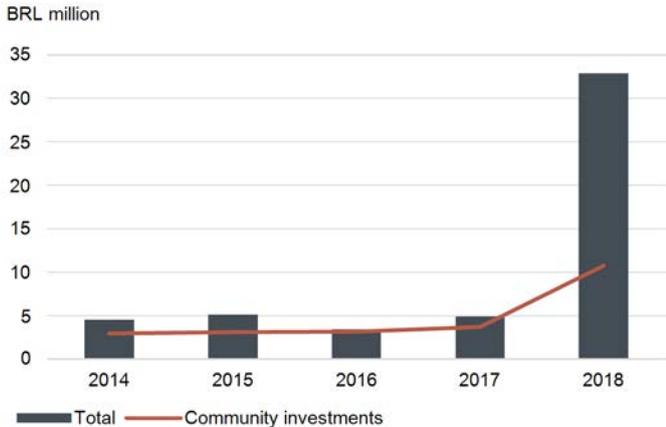
Some of our community programs are based in mining license requirements, while others are voluntary commitments. All major programs have been evaluated to maximize outcomes and impact for the targeted stakeholders. This evaluation has led to restructuring of some programs, while others have been, or will be, phased out. For more information, see page 32.

Another important contribution is the transfer of competence that takes place through our collaboration with universities and research institutions. This includes the Biodiversity Research Consortium Brazil-Norway. See page 15 for more information.

Extruded Solutions has several 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 page 41.

Community investments, charitable donations and sponsorships in Brazil



Around 15 million BRL relates to emergency relief following the extreme rainfall and subsequent flooding of Barcarena in 2018. Around 4 million BRL relates to food cards as part of the TAC agreement.

Organization and work environment

Our safety performance in Brazil improved in 2018 with a combined total recordable injury (TRI) rate, including employees and contractor employees, reaching 1.8, which was an improvement from 2.0 in 2017. Our global target was 2.4. While the high-risk incidents rate improved, the long-term development is still of concern.

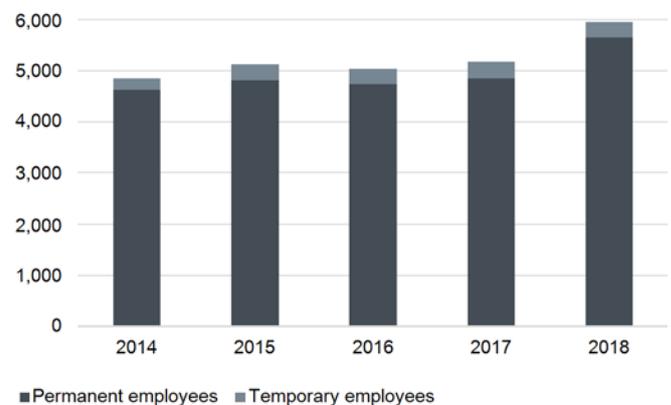
Following the acquisition of Sapa in 2017 and Arconic’s two Brazilian aluminium plants in 2018, Hydro had 5,658 permanent employees at the end of 2018 in Brazil, an increase of almost 1,000 employees since the end of 2016. The integration of the plants, which are now part of Extruded Solutions, include 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. We initiated the development of a global framework for competence management in 2018. 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 in our Brazilian operations. The survey did not include the business area Extruded Solutions, which will be included in the next survey which will be run in 2020. Maintaining employee engagement is a key priority going forward. All units have action plans based on their results.

Number of employees in Brazil



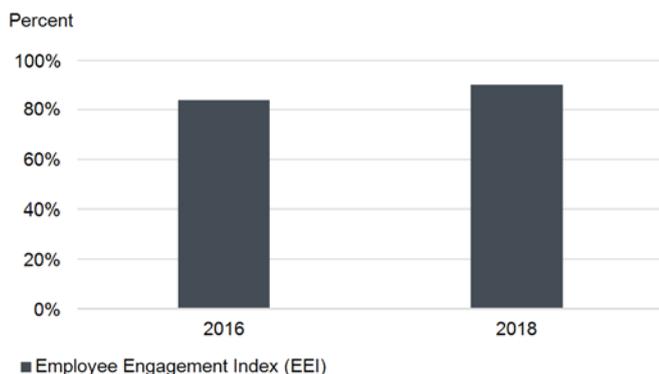
Developing and retaining the right competence

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 employees³ 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.

For more information about our training programs, see the case "Living our values – sharing a common purpose" on page 30.

Hydro Monitor



Hydro Monitor did not include employees from Extruded Solutions in 2018. A new Hydro Monitor will be performed for all employees in 2020.

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.

In 2018, we updated the ambition to increase diversity and accommodate an inclusive work environment. Equal opportunities independent of gender and disabilities continues to be a main area for Hydro. Our human resources processes are also used in advancing diversity and inclusion. For more information, see the case "Diversity as a competitive advantage" on page 33.

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.

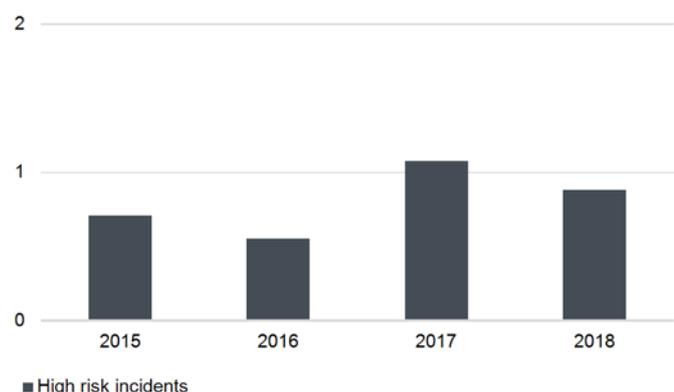
All our operations in Brazil are active in identifying risks, and our performance indicator related to risk is important in helping monitor and manage processes and tasks with high inherent risks. Despite that the high-risk incidents rate, which is a leading indicator, improved in 2018, the development is still of concern.

Hydro's most important target is no fatal accidents. Since 2011, there have been no accidents in our Brazilian operations that have resulted in fatalities. Still, we cannot rest in this area, and in 2019 we will deploy fatality prevention protocols and associated life-saving rules and behaviours 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.

³ Excludes employees on leave and those being employed after the main part of My Way is performed.

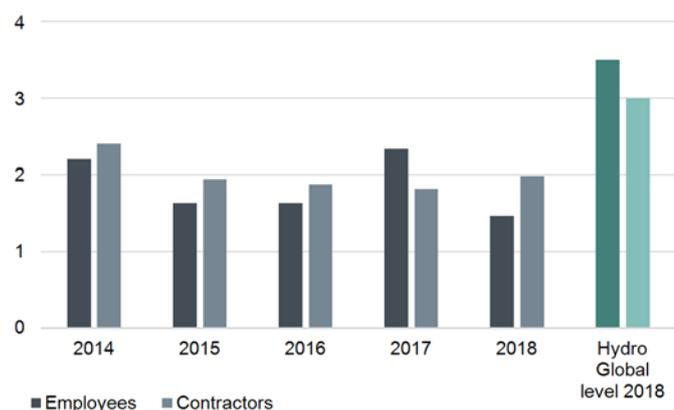
High risk incidents in Brazil

Per million hours worked (employees and contractors combined)



Total recordable injuries in Brazil

Per million hours worked



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.

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 mitigation measures depending on the evolving risk picture.

Where identified through risk assessments, security guards are employed on a regular basis to help 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.

We have emergency plans in place at the plant and business area level, and we train with these regularly. In addition, our corporate level emergency team regularly meets to discuss risk events which have the potential to develop into crisis, and how we should respond, should these events materialize. We regularly use lessons identified to indicate a standardized approach to emergency planning, more closely linked to risk mapping, improving our ability to deal with emergency situations. In 2019, we will carry out emergency and crisis management workshops to help link the processes of risk management more closely to emergency and crisis management, ensuring we are prepared to coordinate our responses 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.

The cyberattack that hit Hydro on March 19 2019, affected our entire global organization, with Extruded Solutions having suffered the most significant operational challenges and financial losses. Operations and sales have recovered successively during the quarter, reducing the incremental financial impact accordingly. Hydro has a robust cyber insurance in place with recognized insurers.

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.



While our R&D efforts are global, some of the most relevant topics for our Brazilian operations include

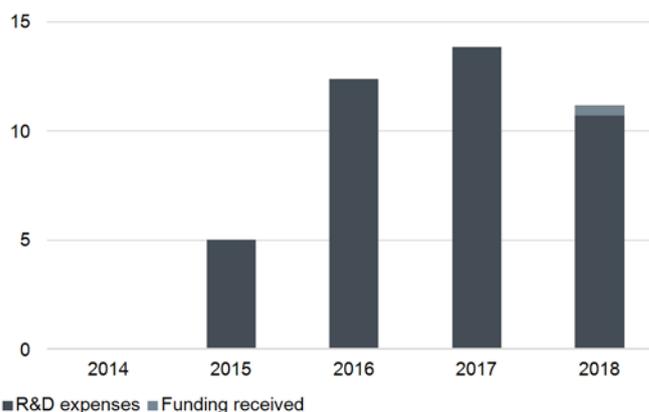
- Making products that promote the use of aluminium and sustainable development
- Using R&D and technology to ensure optimal operations in existing assets, including cost and HSE
- Increasing the share of value-added products and tailored solutions for the customer
- Utilizing the opportunities of Industry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

In our industry, we must start developing today the technology we will be using in 10 or 20 years. This includes improved mining and alumina refining, smelter technology, new aluminium alloys with special properties, lighter transportation, better packaging to reduce cooling needs and food spoilage, and waste handling. 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.

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. A significant research and development department for bauxite and alumina has been built at Alunorte in Barcarena, Brazil.

R&D Expenses in Brazil

BRL million



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. For more information, see case about alternative use of bauxite residue on page 37.



Case stories

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Quick overview

These case stories represent examples on how we work to implement our policies as described in “Our approach” earlier in this report.

To learn more about our sustainability strategies, please see www.hydro.com/sustainability.

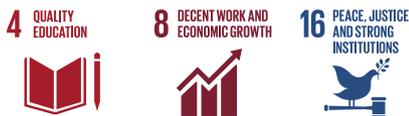
To learn more about our corporate policies, please see www.hydro.com/principles

Living our values – sharing a common purpose

Seeking to stimulate team engagement, by sharing a common purpose, we are continuously working through guidance and training initiatives to supplement leaders' efforts to demonstrate commitment to these values in our day-to-day operations.

In 2018, about 350 leaders of Alunorte, Albras and Mineração Paragominas, located in Pará state, participated in the Leadership Development Program, in which issues that enforce The Hydro Way, such as integrity, health and safety, social responsibility and communication, among others, were discussed.

The activities involved conceptual aspects, experiences and group dynamics. The group shared trends and moments of reflection regarding opportunities for improvement, or enforcing just and responsible actions. Ways to ensure safe behavior, the ability to consider the different audiences with which the company deals and strengthening sustainable business were also addressed.



A corporate social responsibility training program for Brazil was initiated in mid-2018. More than 80 leaders from Alunorte, Paragominas and Albras took part in the first phase. Concepts and good practices were discussed, as well as self-assessment and encouraging the formation of working groups to deal with relevant topics. In 2019, the initiative will have a leadership module. We are also aiming at developing an online version for all employees.

Within compliance, about 800 employees in Bauxite & Alumina (B&A) and Albras have done online training on topics such as data privacy, corruption and bribery, anti-competitive practices. Our Code of Conduct was revised in 2018, and our employees have also received general training in this. . In addition, around 500 employees participated in classroom courses and workshops.

In 2018, we arranged our first Compliance Week, with activities in our operations in Barcarena and Paragominas, as well as in the offices in Belém and Rio de Janeiro. About 1,200 copies of the revised Code of Conduct was distributed, in addition to a booklet of ethical dilemmas.

In Extruded Solutions, managers participated in trainings on the Code of Conduct, anticorruption practices, and compliance with competition and contract management. Around 80 key employees, such as managers, supervisors and experts, participated in classroom training, on these topics.

Within health, safety and environment (HSE), B&A and Albras are developing the concept of MDHO – Human and Organizational Performance Improvement. Activities include training leaders and employees, own and contracted, in work practices and actions aimed at improving the elements of the work system (human factors, management system and facilities/equipment). The MDHO program reached 230 leaders at Alunorte and Paragominas, and 160 employees at Albras. Another program implemented is the “Abuse of Alcohol and Other Drugs Prevention Program”, whose main objective is to provide more health, safety and quality of life to our employees. These actions made it possible for all units to achieve important HSE targets, despite all challenges faced during 2018.

At Extruded Solutions' Itu plant, HSE actions in 2018 focused on continuing the Safety Management Program, based on 5 pillars, with the motto “Make it Simple and Well Done”, and keeping managers very close to the operational team.

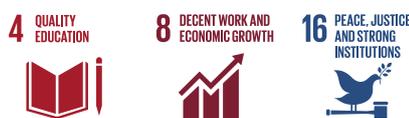
At the extrusion plants Tubarão and Utinga, acquired in 2018, a schedule of safety protocol training was carried out, involving management team, supervisors and coordinators. The program reached around 900 participants. These trainings will continue throughout 2019.

The results can be seen in practice. On April 4, 2019, the Itu unit reached 840 days with no reported accidents. On the same date, Utinga (540 days) and Tubarão (180 days) also recorded long periods of activities without accidents.

Seeking to build trust through dialogue

We believe in stakeholder dialogue that is reciprocal and continuous, and has transparent interaction. This is a key pillar to build trust with all parties concerned, find new ways to collaborate and to create a more viable society.

The challenges faced by Alunorte following the heavy rainfalls in February 2018 contributed to strengthening Hydro's commitment to remain close to its neighbors in Barcarena, in the state of Pará. A prompt response through engagement and action was needed to make a positive difference and maintain a channel to share information, ideas, concerns and initiatives, guided by respect and by The Hydro Way.



We have worked to create and make full use of dialogue opportunities with local communities, in order to increase mutual knowledge and understanding.

In 2018, we had more than 130 gatherings in Barcarena, including meetings, visits and events, with about 40 communities. Issues related to Alunorte, including implemented operational improvements, the company's socio-environmental impacts, responsible management ties, safety of the bauxite residue deposits, social investments, and terms of commitment and improvement possibilities in the region were on the agenda.

In order to reach the larger community and raise awareness and competence of our operations, we have invited our employees and their families to visit Paragominas, Albras and Alunorte. At Alunorte they visit the pressfilter, the original bauxite residue storage deposit DRS 1 and the water treatment plant, to see some of the critical process steps and our new technology. We have also initiated a program with one of the local schools for their teachers to visit. In Paragominas, we are running a program with PhD students and students from public universities, in engineering, geology and social sciences.

We also support and take part in the Sustainable Barcarena Initiative (SBI), an entity to be established with independent organization and governance. It aims at creating an environment that stimulates dialogue, conflict resolution, consensus building, sharing of information and prioritization of relevant projects in order to build a better Barcarena to live in. All discussions are mediated by independent facilitators. We have committed to invest BRL 100 million over ten years.

In 2018, SBI's main objective was to mobilize and engage the actors and broaden its knowledge of the reality and the challenges in the region. Different working groups were

created, focusing on: water, education, employability and environment.

Moreover, initiatives promoting dialogue and relationship with other stakeholders have been developed, aiming at sharing information, strengthening joint learning, identifying risks, addressing different points of view and discovering alternatives for a better and better coexistence.

In 2019, a Social Dialogue Group will be implemented in all municipalities where Hydro is present in the Pará State.

Relationship with traditional Quilombola communities

Traditional Quilombola communities are among the most important stakeholders for Hydro in the state of Pará. Our operations in Pará are neighboring traditional Quilombola communities in Barcarena, along the 244 kilometer long pipeline carrying bauxite from the Paragominas Mine to Alunorte, and the associated power transmission lines.

There are certain conflicts between Hydro and the communities in the Quilombola Area of Jambuaçu along the pipeline and transmission lines. These issues relate back to the time before Hydro became owner, and the former owner of the pipeline is still the legal party. In 2018, further efforts were made to resolve this conflict. An internal work group, with representatives from different areas of Hydro, has been redesigned and optimized to allow a broader understanding of the situation. In order to do so, the group also relies on external specialists. Our goal is to develop alternative solutions with a systematic approach.

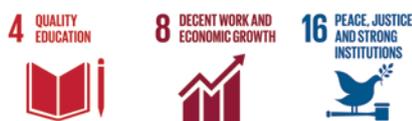
These activities involve representatives of the communities, government agencies, Public Defender's (Defensoria Pública) and Prosecutor's Offices (Ministério Público). The challenge is to find a permanent, fair and sustainable solution by building a new relationship framework with these communities, based on transparency and respect for local culture.

Guided by the current legislation, human rights, international frameworks to which Hydro is a signatory, and also by our values of Care, Courage and Collaboration, we seek towards a better knowledge of the Quilombola communities. Increasing the management of our operations' impacts, land regularization actions and development of a true dialogue are part of the discussion agenda. Thus, we aim at building long-lasting relationships with our neighboring communities and to contribute to the development of their territories.

Initiatives to strengthen our neighbor communities

To be an active participant in the region we belong, be committed to improve people's quality of life, be a development agent – these are some of our ambitions to improve our relationship with the communities surrounding our operations. Several initiatives are being carried out in the State of Pará, where our Bauxite & Alumina and Primary Metal operations are situated.

The initiatives are aligned with the United Nations' Sustainable Development Goals (SDG). The most important SDGs to Hydro's corporate social responsibility agenda are Quality Education - SDG 4, Decent Work and Economic Growth - SDG 8, and Peace, Justice and Strong Institutions - SDG 16. A participatory approach involving all relevant stakeholder lies at the core of our strategy. Below are a few examples of the initiatives we have ongoing.



EmBarca Amazonia 360°

This is an education and training program for young socioenvironmental entrepreneurs, which has as its primary goal to contribute to a sustainable development of the municipality. The initiative, which reaches 300 people, aged 18-to-29 from Barcarena and Abaetetuba municipalities, seeks to stimulate sustainable business ideas in the area, focusing on forest resources and biodiversity.

Ativa Barcarena (Active Barcarena)

This project seeks to assess soil quality and to provide information and technical guidance, for the development of the agricultural potential of communities in the Barcarena municipality.

Todos pelo Trabalho (All for Work)

This program aims to develop strategies for including Barcarena workers in the labor market. Examples include strengthening public agencies dedicated to employment promotion and qualification of the local workforce, through the identification of local potentials.

Amesa

The project aims to support family farmers in Barcarena and Paragominas municipalities. The primary goals are to offer fresh and locally produced products for companies in the area, to increase the income of rural farmers and to support and strengthen local economy.

Volunteering to make a positive difference

Through the "Voluntários em Ação" (Volunteers in Action) program, we encourage employees to devote time, abilities and resources to develop initiatives aligned with our social investment strategy and local needs. In 2018, more than 20 different actions were carried out in Pará, with 700 volunteers, from employees, and contractors as well as their family members.

In Barcarena, actions involved awareness and training related to traffic safety and prevention of dengue fever. Sports courts and soccer fields of five neighboring communities to Hydro have been revitalized by volunteer work. Encouraging sports and culture in these areas is another action which started in December 2018, and will be continued in 2019.

In Paragominas, 850 children and adolescents, benefitted from Hydro's volunteers through the "Menino Feliz" project. This project is an initiative by the Military Police, which serves children and adolescents between the ages of 8 and 16. In celebration of the city's 54th anniversary, 100 Hydro volunteers gave a gift to the city: they planted seedling of the yellow ipê tree along the PA-125 highway. In total, the Volunteering Program has benefited more than 2,000 people in Paragominas.

Diversity as a competitive advantage

Hydro is committed to respecting and welcoming diversity. Aligned with our value Care, we work in several arenas to further improve diversity and inclusion among our employees, so it reflects the country we operate in. We believe a diverse workforce in terms of gender, age and background is a source to competitiveness.

Gender

Although there was an increase in the hiring of women in all Hydro's operations in Pará in 2018, we are still in need to improve the gender balance in order to address the inequality still present in our operations.

Bauxite & Alumina (B&A) and Primary Metal have respectively 15 percent and 6 percent women in the workforce in Brazil. In Extruded Solutions, women account for 17 percent of the total workforce.

These percentages are still below the targets set for 2020, which is to have 20 percent women in permanent positions in Albras, 20 percent in Bauxite & Alumina and 19 percent in Extruded Solutions. We are working to meet these goals through structured training combined with recruitment programs.

Local workforce

Given the importance of our operations in the North of Brazil, and our commitment to prioritize local workforce, 76 percent of our employees in Pará are born in the state, followed by 8 percent from Maranhão, 3 percent from Minas Gerais and 13 percent from other states.

We also seek to contribute to increasing the employability of people in the communities close to our operations. This is done through programs and initiatives, such as skills mapping and assessment, training of local Sine (National Employment System) workers, partnerships with technical schools and universities, in addition to other actions such as incentivizing contractors to prioritize the development and hiring of local labor force.

Diversity

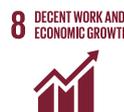
Brazilian Legislation requires companies with more than 100 employees, to employ between 2 and 5 percent of its workforce with people with disabilities (PCD), depending on the number of employees. We aim at meeting the required quota, but we are aware that we still have challenges to overcome, especially at Albras. See note S3.3 for more information.

Ancestry and heritage

In a country with a diverse cultural heritage and diverse ancestry like Brazil, we are committed to reflect this in our workforce. Of the total amount of employees in B&A, Albras and Energy, 25 percent declare themselves as Brazilian citizens of mainly European and Middle-Eastern descent. 72 percent identify as Brazilians of mixed ethnic ancestry, 3 percent as Brazilians of African descent, and 1 percent as Brazilians with predominately East-Asian, South-Asian or Southeast Asian ancestry. None are self-declared as of indigenous origin.

New Talents

To support the admission of new talents to Hydro we develop the Young Apprentice, Internship and Trainee Programs. These programs include technical, leadership and behavioral development, volunteering practices, training, mentoring and project construction. Alunorte, Albras and Paragominas had 140 apprentices in 2018. The main goal is to prepare the young workforce nationally and locally in order to retain talent in the company and develop the region.



Improving our water management systems

To prepare Alunorte for future climate and weather change, we have strengthened the robustness of the water treatment systems. 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 675 MBRL. 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.

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. 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 engineering phase of the project started in April 2018, and the construction started in June 2018.

To complete the construction of the water holding bassins before the next rainy season, Alunorte collaborated with Paragominas.

“The cooperation between the mine and the refinery for the execution of the is a concrete and practical example of internal collaboration in Hydro. The job was performed with total transparency, Paragominas should be recognized for seeing the need for urgency for Alunorte, their immediate response and how they unified efforts and skills towards a single goal”, says project manager Edvalson Firmino.

Heavy rainfall in April 2019 confirmed the integrity of the water holding bassins.

Research to foster biodiversity

We strive to develop our environmental practices to reduce the impact of our activities. We participate in industry initiatives and collaborate with academic research institutions to foster research and development in this field.

To extract the bauxite from Paragominas, we have to remove vegetation and a layer of topsoil and overburden. Our ambition is to establish a forest system of the same structure in the closed areas used for mining, tailings or bauxite residue deposit, that is typical of the forest in the area and to secure as much biodiversity as possible.

In order to achieve this, we are currently piloting three different rehabilitation methods, and have monitoring programs in place to determine which approach yields the best results over time:

- Nucleation
- Standard plantation method
- Natural revegetation



The nucleation method has been tested in Paragominas since 2013. It means that 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. It requires more effort than the other two methods but, after some initial failures in the early phase, we have developed an improved system for structuring the nucleation mounds.

Monitoring results over time

To increase our knowledge and secure a science-based approach to rehabilitation, the Biodiversity Research Consortium Brazil-Norway (BRC) was established in 2013. The consortium brings together researchers from the Federal University of Pará (UFPA), the Federal Rural University of the Amazon (UFRA), the Emilio Goeldi Museum, Norwegian University of Oslo (UiO) and Hydro professionals, both in Brazil and Norway.

The nucleation method is considered to be at the forefront, and the current monitoring indicates that this approach yields better survival in the replanted areas and a more representative plant diversity to what existed before mining. However, it is not clear if there is any difference in the species richness and diversity of fauna returning to the rehabilitated areas. The BRC believes these differences will become more apparent over time, strengthening the need for long term monitoring programs to be in place.

From 2019 on, the BRC will seek to develop, with Hydro and other companies of the mining industry, appropriate biodiversity indicators that can be used to assess the current rehabilitation stage of mined areas, allowing for more effective management during and beyond the mine's operational lifetime.

Creating more resilient species to plant

At Paragominas, we have nursery for growing native tree saplings, generating around 300,000 new saplings from more than 100 native plant species every year. Before being planted in the rehabilitation areas of the mine, these saplings are exposed to stressful growth conditions (e.g. high temperatures and drought), as research shows that this makes them more resilient when they are planted in the field and leads to better survival rates.

By using the nucleation and plantation methods we are able to have a more accurate revegetation process, compared to the natural vegetation process which is more random and dependent on what seeds are in the topsoil.

Rehabilitating the bauxite residue storage areas

Alunorte has an ongoing project for the decommissioning of the original bauxite residue deposit, DRS1, which is approaching the end of its useful life.

The DRS1 has been divided into 11 zones that will be gradually rehabilitated over an estimated period of up to 18 years. This sequential approach to rehabilitation will allow for better rainwater management and even more effective dust control.

The first stage of the rehabilitation, called reshaping, consists of covering the entire deposit surface with bauxite residue from the press filters to reduce the moisture content down to 22 percent. This is then followed by a process of waterproofing, further drainage, soil application and, finally, revegetation. We are also looking into alternative methods, and there are studies ongoing to look at the feasibility of turning it into a solar park, please see page 37.

Throughout 2018, we have been mapping different rehabilitation practices of bauxite and alumina residues areas to identify the best and most effective methods for successful rehabilitation.



R&D to solve bauxite residue challenges

Our dedicated research and development team is continuously looking at the complete value chain to improve our processes and optimize the way we are working. At Alunorte, one of the challenges we are looking into is bauxite residue reuse and the closing of the bauxite residue deposit, DRS 1.

Alunorte produces alumina by the Bayer process. Around half of the bauxite refined ends up as alumina, and the other half becomes bauxite residue that has a high content of caustic soda. The residue is treated through our press filters, before it is dry-stacked in deposits.

Our R&D team wants to study how to close current residue areas and reuse future residue to decrease the impact on the environment and contribute to the circular economy. These R&D activities have a long lead time from idea to fruition, and it may take 10 years and significant investments until one of our improvement ideas has become something operational. That is why we need to have many projects ongoing simultaneously, as some may fail or not be economically and operationally feasible as the project matures.

Making a difference with ‘differential extraction’

One project is looking into a modification of the digestion step in alumina refining to lower the caustic soda content. The new process would reduce the amount of caustic soda chemically associated with bauxite residue – both reducing the volume of caustic soda consumption in the process and creating new opportunities for the utilization of the then less caustic bauxite residue. Our ambition is to reduce the fixed caustic soda consumption by up to 40 percent starting with one digestion line retrofit within 2025.

The team is taking the project to the pilot phase. This follows a period of performing laboratory-scale experiments, and using advanced mathematical modelling.

We are very excited to move this project forward to a pilot. If everything goes according to plan, the pilot will be running from mid 2022. The project aims at bringing us in a more sustainable and profitable direction as it can reduce the amount of residue and facilitate the use of residue in other products, and decrease the consumption of caustic soda.

Bauxite residue as part of the circular economy?

Alunorte and Senai Institute of Innovation in Mineral Technologies have started a partnership to study the reuse of bauxite residue. The work will range from physical, chemical and mineralogical characterization of bauxite residue to conceptual plans and execute a project to implement a pilot plant in the company.

The aspiration is to make Alunorte the reference for reuse of bauxite residue. The project will last until 2022, and Alunorte will invest 5 million BRL.



Alunorte and Senai Institute have teams of professionals with extensive experience in research and development of bauxite residues. The analyses are performed in Senai's laboratories. The project execution involves four Hydro professionals and 11 Senai professionals among PhD, master and college students.

The bauxite residue is rich in iron oxide. For this project, it is necessary to separate the iron component from the bauxite residue. This is done physically using a magnetic separator. This separate fraction, rich in iron, will be used as an alternative iron ore for iron and steel production by the steel industry. A remaining fraction of the iron-poor bauxite residue can be used in the agro-industry as a soil conditioner. These investments yields the possibility to apply concepts of circular economy in the mining industry.

Closing DRS 1

The original bauxite residue deposit, DRS 1, is approaching end of its useful life. We are looking into alternative solutions to close and secure this area, and one of these is to turn it into a solar park. This would be a significant investment, and may contribute to increasing the supply of renewable energy in the region.

Developing our suppliers – investing in the community

By investing in our suppliers, we ensure that they meet our qualification requirements and understand our values. Our suppliers will also be better equipped to run their business in a sustainable and well governed way to benefit both us and the community around us.

In 2018, we restructured our Local Supplier Development Program, combining previous isolated initiatives to create a one-year structured program. The program is conducted in partnership with FIEPA (Federation of Industries of Pará) through the REDES Initiative – Innovation and Economic Sustainability – and includes qualification, registration, performance assessment and development.

There are three training modules

- Administrative
- Commercial
- Operations

The modules are based on our values: *Care, Courage and Collaboration*. Subjects are taught by employees and experts from Hydro and by instructors hired by FIEPA/REDES. At the end of each course, action plans are presented, and participants receives coaching and mentoring during the program. The best performances are certified at a Hydro recognition event in partnership with FIEPA.

Starting in 2018, the local supplier development program has brought together 194 different representatives from the 26 companies which hold contracts with Hydro companies.

During the course, classes on financial management, personal career management, ethics and compliance, organizational management, marketing and sales, proposal for the industry and commercial prospecting, as well as pricing and commercial proposal were taught.

Investing in improved supplier relationships has already given us some formal recognition. In 2018, Hydro was awarded in four categories of the REDES Award, including first place in the "Supplier Development Case" category.

We promote policies oriented towards the development of productive activities everywhere we operate. We invest in the qualification of our suppliers to guarantee adequate provision of quality products and services.

4 QUALITY EDUCATION



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



15 LIFE ON LAND



Creating value beyond our operations

Our main contribution to society is as an employer, supplier of products, purchaser of goods and services, and as a tax payer, and the spillover effects this has. The neighboring communities of our operations in Pará has more complex challenges than what can be solved through our normal operations, we therefore strengthen the positive impact on societies through targeted initiatives as part of our CSR strategy.

More than 5,000 people enter our gates as our employees, in addition to around 8,000 full-time equivalents of contractors. As an employer, an important contribution toward respecting human rights is to secure decent working conditions in our operations. The wages, in total more than BRL 500 million for our employees only, earned and spent in the neighboring communities create spillover effects, through purchase of goods and services. Hydro's operations in the state of Pará makes us one of the largest private employers in the region.



Every year, Bauxite & Alumina business area has around 2,000 active suppliers. The procurement spent on these are on average BRL four billion, where two thirds comes from local suppliers. In addition comes the procurement from Hydro's project organization in Brazil. We believe local sourcing is fundamental in supporting a stable local economy. We have strict requirements for supplier qualifications, and we also have a supplier development program to help local suppliers meet our requirements and develop their business in a more sustainable direction.

In Brazil, the tax system is complex with a broad range of direct and indirect taxes levied at the federal, state and municipal levels. For state and municipal level, Hydro's tax contribution is through indirect taxes. In the state of Pará, we pay ICMS tax when purchasing diesel, fuel oil and electricity, and 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, see more in Hydro's Country by Country-report. Hydro paid in total BRL 670 million in taxes and fees in 2018 in Brazil.

The state of Pará, in northern Brazil, is 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. 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.



The Alunorte situation

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- 43 Insufficient freeboard prompted production embargo
- 43 Embargo against use of new bauxite residue deposit (DRS2)
- 43 Alunorte discharged partly treated rainwater
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- 46 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 between February and May 2018 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.

The federal court in Belem, Brazil, lifted the production embargo on the Alunorte alumina refinery under the criminal lawsuit on Monday, May 20, 2019, allowing Alunorte to ramp up towards normal production after running at half capacity for more than a year. On September 20, 2019, The Federal Court of Pará lifted the embargo on Alunorte's new bauxite residue disposal (DRS2) under the civil lawsuit. At the time of this report Alunorte is still subject to an embargo on DRS2 imposed by the same court in a parallel criminal lawsuit, on which a decision is expected shortly.

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. The embargo was lifted in May 2019.

More than 90 investigations and inspections were conducted between February and May 2018 by the relevant authorities, including the federal environmental authority Ibama and the state environment authority 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. 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 between February and May 2018 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 Defense;
- 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, Paraíba, 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 2018, 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.

On October 25, 2018 the embargo previously imposed by Ibama on DRS2 and the press filters was suspended. Alunorte, Hydro and Ministério Público Federal filed on August 31, 2019 a joint petition to the Federal Court in Belem to lift the embargoes on the new bauxite residue deposit area - DRS2.

The joint petition aims to allow the Alunorte alumina refinery to resume its installation and commissioning activities at DRS2. The petition came after Alunorte, Hydro, Pará state environmental agency SEMAS and Ministério Público Federal signed a Memorandum of Understanding establishing an agreement regarding the necessary measures to resume commissioning activities at the new, state-of-art deposit area.

As part of the agreement, Alunorte will perform a socioeconomic study on possible impacts of DRS2. If the study indicates a need for compensatory measures, such measures shall aim to contribute to sustainable and long-term improvements in potentially affected communities. Moreover, Alunorte is committed to involve Ministério Público Federal in the potential necessary updates of the environmental license. On September 20, 2019, The Federal Court of Pará lifted the embargo on DRS2 under the civil lawsuit. At the time of publishing this report, Alunorte is still subject to an embargo on DRS2 imposed by the same court in a parallel criminal lawsuit, on which a decision is expected shortly.

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 effluent 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 effluent 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 handle more extreme weather and increased precipitation.



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

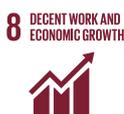
Strengthening our community engagement

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.



4 QUALITY EDUCATION



8 DECENT WORK AND ECONOMIC GROWTH



16 PEACE, JUSTICE AND STRONG INSTITUTIONS

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

During the embargo, Hydro was committed to preserving as many jobs as possible. 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. Ministério Público de Trabalho (which is the public prosecutor for labor issues) and the respective trade unions were informed in advance.

In 2018, 121 employees were dismissed at Alunorte, all unrelated to the Alunorte situation. Of these, 53 were related to the change in technology from drum filters to press filters.

Paragominas suspended temporarily 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 has been in dialog with all the relevant authorities, at the local, regional and national level in Brazil, to seek a common agreed solution for the resumption of normal operations. This includes using the new and modern deposit area and the state-of-the-art press filters.

On September 5, 2018 Alunorte signed two agreements with the government of Pará and Ministério 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 in Hydro's Annual Report 2018 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/SEMÁS, 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.

The federal court in Belem, Brazil, lifted the production embargo on the Alunorte alumina refinery under the criminal lawsuit on Monday, May 20 2019, allowing Alunorte to ramp up towards normal production after running at half capacity for more than a year. This decision came after the decision on Wednesday, May 15, to lift the production embargo under the civil lawsuit.

Alunorte, Hydro and Ministério Público Federal filed on August 31, 2019 a joint petition to the Federal Court in Belem to lift the embargoes on the new bauxite residue deposit area - DRS2.

The joint petition aims to allow the Alunorte alumina refinery to resume its installation and commissioning activities at DRS2. The petition came after Alunorte, Hydro, Pará state environmental agency SEMÁS and Ministério Público Federal signed a Memorandum of Understanding establishing an agreement regarding the necessary measures to resume commissioning activities at the new, state-of-art deposit area.

As part of the agreement, Alunorte will perform a socioeconomic study on possible impacts of DRS2. If the study indicates a need for compensatory measures, such measures shall aim to contribute to sustainable and long-

term improvements in potentially affected communities. Moreover, Alunorte is committed to involve Ministério Público Federal in the potential necessary updates of the environmental license.



Environmental and social statements

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About the reporting

Principles for reporting on Environmental and social statements

The purpose of this report is to provide stakeholders with a fair and balanced picture of relevant aspects, engagements, practices and results for Hydro's operations in Brazil in 2018. We believe that the reporting in total satisfies this purpose. This report 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 our operations. Reporting is not necessarily the target of the dialogue process, but when relevant, we use the outcome to improve our reporting, see page 21.

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 limitations

The scope of this report is Hydro's operations in Brazil for the period January 1 to December 31, 2018. Certain subsequent events up till the final approval of this report has also been included based on a qualitative basis. 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).

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.

Financial data has normally been collected in NOK and has been converted to BRL using the 12 months conversion rate of The central bank of Norway.

Assurance

This report is mainly based on information provided in Hydro's Annual Report 2018, specifically the sections Viability performance and Viability performance statements. These sections have been subject to limited assurance by our external auditor KPMG 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). The country by country report has also been subject to limited assurance by KPMG and has been approved by Hydro's Board of Directors. The auditor's limited assurance report is found on page 268 in Hydro's Annual Report 2018.

The case stories starting from page 29 have not undergone external assurance.

Environmental statements

The table below shows Hydro's main quantitative indicators related to its environmental performance. More detailed information is, where indicated, available in the notes to the environmental statements.

Environmental performance

	Notes	%-change 2017-2018	2018	2017	2016	2015	2014	GRI Standards reference ⁶⁾
GHG emissions								
Direct GHG emissions from consolidated operations (Million tons CO ₂ e) (equal to scope 1)	E1.1	-35%	3.24 ⁵⁾	4.96	4.94	4.75	4.77	305-1
Indirect GHG emissions from consolidated operations (Million tons CO ₂ e) (equal to scope 2)	E1.1	-28%	0.86 ⁵⁾	1.20	1.20	1.15	1.17	305-2
Direct GHG emissions from Hydro's ownership equity (Million tons CO ₂ e) (equal to scope 1) ¹⁾	E1.4	-35%	2.75 ⁵⁾	4.23	4.24	4.04	4.06	305-1
Indirect GHG emissions from Hydro's ownership equity (Million tons CO ₂ e) (equal to scope 2) ¹⁾	E1.4	-27%	0.49 ⁵⁾	0.67	0.68	0.64	0.66	305-2
GHG intensity								
Alumina refining (mt CO ₂ e per mt alumina)	E1.6	15%	0.79 ⁵⁾	0.69	0.69	0.69	0.69	305-4
Electrolysis in Primary Metal (mt CO ₂ e per mt aluminium)	E1.7	4%	1.77 ⁵⁾	1.70	1.60	1.70	1.67	305-4
Energy production and consumption								
Energy consumption (TWh)	E3.1	-34%	14.99 ⁵⁾	22.59	22.55	21.74	21.81	302-1/302-4
Energy intensity								
Alumina refining (GJ per mt alumina)	E3.2	13%	8.95 ⁵⁾	7.94	8.07	8.01	7.99	302-3
Electrolysis process (MWh per mt aluminium)	E3.2	0%	14.56 ⁵⁾	14.60	14.45	14.45	14.33	302-3
Other resource use								
Alumina (Thousand mt)	E4.1	-33%	582 ⁵⁾	866	854	833	841	301-1
Total water withdrawal from water stressed areas (million m ³)	E4.2	0%	0 ⁵⁾	0	0	0	0	303-1/303-2
Waste (Thousand mt)								
Bauxite tailings	E5.1	-48%	2,116 ⁵⁾	4,067	4,117	4,128	4,333	MM3
Bauxite residue (red mud)	E5.1	-47%	3,191 ⁵⁾	5,979	6,426	5,973	6,069	MM3
Hazardous waste ²⁾	E5.2	-6%	78 ⁵⁾	111	83	82	65	306-4
Other waste ²⁾	E5.2	-38%	83 ⁵⁾	175	135	171	192	306-2
Hazardous waste to landfill (percent) ²⁾	E5.3	-14pp. ³⁾	38% ⁵⁾	52%	58%	52%	69%	306-2
Biodiversity in mining								
Accumulated area disturbed (hectares) ⁴⁾	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	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) Values are given as percentage points

5) Accumulated area disturbed since construction of the mining area started. The mine started its production in 2006

6) Results impacted by the embargo on Alunorte, and curtailment of Albras and Paragominas.

7) All GRI references below refers to the GRI Standards (2016) or (2018) except MM1 and MM3 which refer to the GRI G4 Mining and Metals Sector Supplement

Notes to the environmental statements

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.

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.

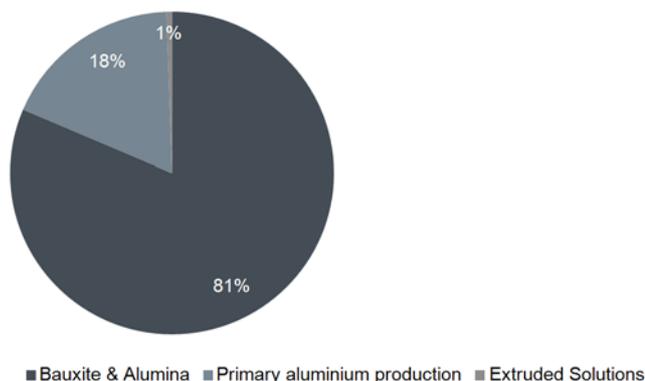
As Hydro is an integrated company, with ownership along the whole aluminium value chain, the majority of Hydro's emissions are covered within scope 1 and 2 emissions. Scope 3 emissions are normally relevant for external transport, contributing with significantly less than 5 percent of Hydro's total greenhouse 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.

Hydro's consolidated direct greenhouse gas emissions per business area in Brazil



Greenhouse gas emissions - consolidated activities

Million tons CO ₂ e	2018	2017	2016	2015	2014
Direct GHG emissions	3.24	4.96	4.94	4.75	4.77
Bauxite & Alumina	2.64	4.14	4.16	3.94	3.96
Primary aluminium production	0.58	0.81	0.77	0.80	0.80
Extruded Solutions	0.02	0.01	0.01	0.01	0.01
Indirect GHG emissions	0.86	1.20	1.20	1.15	1.17
From electricity generation (mainly primary aluminium production)	0.86	1.20	1.20	1.15	1.17
Total GHG emissions	4.10	6.16	6.15	5.90	5.94

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.

E1.2 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. Emissions are calculated based on automatic process measurements.

Direct GHG emissions per GHG type - consolidated activities

Million tons CO ₂ e	2018	2017	2016	2015	2014
CO ₂	3.17	4.88	4.89	4.67	4.70
PFC	0.07	0.08	0.05	0.08	0.07
Total GHG emissions	3.24	4.96	4.94	4.75	4.77

Hydro's direct and indirect emissions have decreased significantly in 2018 due to the embargo at Alunorte, and curtailment at Albras and Paragominas.

E1.3 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.

Greenhouse gas emissions - ownership equity

Million tons CO ₂ e	2018	2017	2016	2015	2014
Direct GHG emissions	2.75	4.23	4.24	4.04	4.06
Bauxite & Alumina	2.43	3.81	3.83	3.62	3.64
Primary aluminium production	0.30	0.41	0.39	0.41	0.41
Extruded Solutions	0.02	0.01	0.01	0.01	0.01
Indirect GHG emissions	0.49	0.67	0.68	0.64	0.66
Electricity generation (mainly primary metal production)	0.49	0.67	0.68	0.64	0.66
Total GHG emissions	3.24	4.90	4.92	4.69	4.72

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.

E1.4 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.

E1.5 GHG intensity – Electrolysis

Reporting principles

The GHG intensity is calculated based on greenhouse gas emissions from the electrolysis process. 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.

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.

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, and from the aluminium electrolysis process.

Other Emissions

Metric tons	2018	2017	2016	2015	2014
Dust and particles	1,814	3,745	3,378	3,873	4,052
Fluorides to air	231	314	300	366	323
Nitrogen oxide	5,375	7,628	7,648	7,199	7,401
Sulphur dioxide (SO ₂)	13,044	28,521	27,535	26,326	30,005

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.

Hydro uses ozone depleting substances in certain applications in its Brazilian operations. In 2018, Hydro used in total 5.2 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).

Methane (CH₄) and N₂O 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 per year 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, our 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 environment

	2018	2017	2016	2015	2014
Spillages, leakages	1	0	0	0	1

GRI-reference: GRI Standards 306-3 (2016)

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.

In 2014, one spillage of about 100 m³ caustic material from the dewatering pond management system at Alunorte, Brazil, reached ground and surface water nearby the dewatering pond. Hydro engaged an external firm to investigate possible extent and damage to ground water. Four groundwater monitoring campaigns have been performed and the report was finalized in 2016, concluding that the spillage did not result in any significant impact of the ground water. Furthermore, river monitoring and soil samples could not detect any impacts.

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	4	5 ¹⁾	0	0	0

1) All five permit breaches relate to water withdrawal above the permit limit in Paragominas, Brazil

There were 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 2 on page 149 in Annual Report 2018. For information about provisions for environmental clean-up and asset retirement obligations (ARO) and environmental liabilities see notes 35 and 36 on page 197-198 in the Annual Report 2018.

Note E3 – Energy**E3.1 Energy consumption and energy production***Reporting principles*

Energy consumption includes purchased energy in Hydro's consolidated activities. Hydro in Brazil does not purchase heating, cooling or steam, which is produced internally and is reported as "other" energy consumptions.

Energy consumption per energy carrier - consolidated activities

Petajoule (PJ)	2018	2017	2016	2015	2014
Coal	13.2	15.2	15.2	13.5	14.6
Coke	5.1	6.8	6.4	6.5	6.4
Electricity	19.3	27.0	27.1	25.9	26.4
Gasoline	0.0	0.0	0.0	0.0	0.0
Natural gas	0.3	0.2	0.2	0.2	0.1
Oil	15.0	30.7	30.9	30.7	29.5
Other	1.1	1.4	1.3	1.4	1.4
Total energy consumption in PJ	53.9	81.3	81.2	78.2	78.5
Total energy consumption in TWh	15.0	22.6	22.5	21.7	21.8

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	23.2	32.9	32.0	31.6	31.7
Extruded Solutions	0.6	0.2	0.3	0.3	0.2
Total energy consumption	54.0	81.3	81.2	78.3	78.5

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.

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 at the smelter Albras 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	2018	2017	2016	2015	2014
1 000 metric tons					
Alumina	582	866	854	833	841
Aluminium fluoride	6	9	9	9	9
Lime	35	62	60	57	60
Caustic soda	363	649	640	592	612
Sulphuric acid	23	21	20	12	19
Flocculants	3	7	6	5	5

GRI Reference: GRI Standards 301-1 (2016)

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 the definition from International Council on Metals and Mining.

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.

Total water withdrawal by site	2018	2017	2016	2015	2014
million m3					
Albras	0.95	1.30	1.17	0.96	0.77
Alunorte	31.52 ¹⁾	12.63	11.62	11.83	10.82
Itu	0.04	0.03	0.03	0.03	0.04
Paragominas	17.34	21.89	20.46	19.98	20.31
Total water withdrawal	49.85	35.85	33.28	32.80	31.93

1) 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 annual precipitation.

Total water withdrawal by source

Million m3	2018	2017 ¹⁾	2016	2015	2014
Surface water (fresh water)	15.31	16.50	17.04	16.82	16.86
Surface water (sea water)	0.00	0.00	0.00	0.00	0.00
Ground water	11.01	12.72	11.58	11.49	10.29
Municipal water	0.04	0.03	0.03	0.03	0.04
Rain water	23.49 ²⁾	6.60	4.63	4.46	4.75
Total water withdrawal	49.85	35.85	33.28	32.80	31.93
Re-used water ³⁾	7.28	2.57	2.73	3.92	4.19
Re-used water as percentage of fresh water withdrawal	28%	9%	10%	14%	15%

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 annual precipitation.

3) Alunorte uses waste-water from another organization, Paragominas.

GRI-reference: GRI Standards 303-3 (2018)

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.

Our alumina refinery Alunorte in Pará in norther 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.

There has been a water tax within the state of Pará since 2015.

Withdrawal from water-stressed areas

Million m3	2018	2017	2016	2015	2014
Total water withdrawal from water-stressed areas ¹⁾	0	0	0	0	0

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, and according to the tool none of Hydro's sites in Brazil are categorized as water stressed.

Total water discharge by destination

Million m3	2018	2017 ¹⁾	2016	2015	2014
River (surface water)	29.37	25.24	19.61	20.14	19.87
Sewage (third-party water)	0.04	0.00	0.00	0.00	0.00
Other	16.29	10.58	13.63	12.63	12.66
Total water discharge by destination	45.70	35.82	33.24	32.77	32.53

1) Excluding Extruded Solutions

GRI Reference: GRI Standards 303-4 (2018)

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. For more information see the section on Waste and efficient resource use on page 17 in this report.

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 see page 17).

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. Bauxite & Alumina improved its waste reporting in 2016 and 2015. Figures from earlier years are not comparable, and are thus not included.

The EU waste catalog will be implemented in 2019 for Extruded Solutions sites. 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.

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	2014
Spent potlining	16.6	15.6	8.9	11.6	14.4
Other hazardous waste	61.5	95.6	74.3	70.5	50.8
Total hazardous waste	78.1	111.2	83.2	82.1	65.2
Other waste	83.4	175.3	135.0	171.3	192.3
Total waste	161.5	286.4	218.3	253.4	257.5

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	11%	6%	5%	11%	0%
Landfill	38%	52%	58%	52%	69%
Other	31%	18%	18%	19%	29%
Reuse/recycling	20%	24%	19%	18%	2%

Treatment of other waste

	2018	2017	2016	2015	2014
Energy recovery	1%	3%	2%	3%	0%
Landfill	81%	90%	84%	84%	91%
Other	5%	2%	3%	4%	7%
Reuse/recycling	13%	5%	11%	9%	2%

GRI-reference: GRI Standards 306-2 (2016)

The majority of non-hazardous waste to landfill is related to coal fly and ash from the steam generation process at Alunorte. This material is preferably used in the access roads in the bauxite residue deposits to increase stability throughout the humidity reduction (blending). Sand from the Bayer process has previously been categorized separately from bauxite residue and is a part of the non-hazardous waste to landfill figure above. Following the introduction of press filters, this is no longer necessary, and the sand is no longer produced since the start of the press filter operation in 2018. For 2018 the sand is categorized as bauxite residue.

Note E6 – Biodiversity

E6.1 Overburden moved

Reporting principles

Total volume (in metric tons) of overburden moved in Hydro's mine in Paragominas. This is the only mine within Hydro's consolidated operations.

Overburden moved	2018	2017	2016	2015	2014
Million metric tons					
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 rehabilitation - 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 future mining	380	257	364	424	458
Ongoing rehabilitation areas ¹⁾	2,203	1,872	1,689	1,509	1,231
Rehabilitation gap ¹⁾	296	119	238	299	564
Historical gap ²⁾	-	8	-	-	-
Mined area available for rehabilitation ³⁾	131	-	-	-	-
Total area affected	7,879	6,621	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

3) New category from 2018

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)

Conservation status	MMA ¹⁾		Semas ²⁾		IUCN ³⁾	
	Fauna	Flora	Fauna	Flora	Fauna	Flora
Critically endangered	3	2	2	1	2	1
Endangered	8	1	6	0	3	1
Vulnerable	27	2	8	7	17	15
Threatened	0	0	0	0	0	0
Near threatened	1	0	0	0	15	1
Data deficient	1	0	0	0	3	0
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 22. 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 thus 100 percent of the production at Alunorte while primary aluminium production includes 100 percent of production at Albras. Alumina and primary aluminium production are by far the most energy and GHG intensive processes in Hydro.

Production volumes consolidated activities

1 000 metric tons	2018	2017	2016	2015	2014
Bauxite production	6,214	11,435	11,132	10,060	9,481
Alumina production	3,712	6,397	6,341	5,962	5,933
Primary aluminium production	308	447	446	435	441

Production volumes ownership equity

1 000 metric tons	2018	2017	2016	2015	2014
Bauxite production	6,937	12,249	12,042	10,979	10,382
Alumina production	3,378	5,821	5,770	5,425	5,399
Primary aluminium production	157	228	228	222	225

Production volumes has decreased significantly in 2018 due to the embargo at Alunorte (alumina), and curtailment at Albras (primary aluminium) and Paragominas (bauxite).

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 in Hydro's Annual Report 2018.

Social performance

	Notes	% change 2017-18	2018	2017	2016	2015	2014	GRI Standards reference
<i>Employees</i>								
Number of permanent employees	S1.1	8%	5,658	5,227	4,743	4,830	4,631	102-7 (2016)
Share of women	S1.1	1 pp ¹⁾	13%	12%	13%	12%	12%	
Number of temporary employees ²⁾	S1.2	-10%	295	327	306	308	231	102-8 (2016)
Full-time equivalents for contractor employees	S1	9%	8,100	7,400	8,100	6,700	- ⁷⁾	102-8 (2016)
New employees	S1.3		415	393 ⁴⁾	235	595	736	401-1 (2016)
Turnover	S1.3	5 pp ¹⁾	11%	6%	6%	13%	13%	401-1 (2016)
Hydro Monitor Employee Engagement Index	S4	6 pp	0%	-	90%	-	-	
Payroll (NOK million)	S1.1		518	450 ⁴⁾	407	370	423	201-1 (2016)
<i>Health and safety</i>								
Sick leave	S5							
S5.1	S5.1	-0,1 pp ¹⁾	2.0 %	2.2 %	2.2 %	2.3 %	- ⁷⁾	403-2 (2018)
Total recordable injuries (TRI) rate ³⁾	S5.1	-12%	1.8	2.0	1.8	1.8	- ⁷⁾	403-2 (2018)
Employees		-37%	1.5	2.3	1.6	1.6	2.2	
Contractors		9%	2.0	1.8	1.9	1.9	2.4	
Number of fatal accidents	S5.1		0	0	0	0	0	403-2 (2018)
Employees			0	0	0	0	0	
Contractors			0	0	0	0	0	
High risk incidents	S5.2	-13%	21	24	13	17	- ⁷⁾	403-2 (2018)
Current income tax (NOK million)	S7	-26%	312	424	853	396	343	
<i>Research and Development (BRL million)</i>								
R&D funds received ⁴⁾	S8	100%	0	0	0	0	0	201-4 (2016)
R&D expenses	S8	-23%	11	14	12	5	-	
<i>Social investments</i>								
Community investments, charitable donations and sponsorships (BRL million) ⁴⁾	S9	576%	33	5	3	5	5	
<i>Compliance</i>								
Cases reported through AlertLine	S10.1	-	192	-	-	-	-	102-3 (2016)
Confirmed instances of corruption	S10.1	0%	0	0	0	0	0	205-3 (2016)
Confirmed human rights breaches	S10.1	0%	0	0	0	0	0	406-1/407-408-1/409-1 (2016)
Relocation of people	S10.3		0	0	0	0	0	G4-MM9
Training in business ethics Hydro	S10.4	-	533	⁴⁾				412-2/205-2 (2016)
Supplier audits	S10.5	-24%	83 ⁶⁾	109	123	129	61	HDD-01

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, but not Utinga and Tubarao

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.

7) 2014 figures are not available

8) Comparable historical data is not available

Notes to the Social Statements

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 8,100 full-time equivalents during 2018. The majority relates to Hydro's Bauxite & Alumina activities.

S1.1 Permanent employees by gender, age and payroll

Permanent employees by gender

	2018	2017	2016	2015	2014
AI	1184	1206	1166	1260	1163
Women	6%	5%	6%	7%	4%
Men	94%	95%	94%	93%	96%
Alunorte	1963	2008	1939	1986	2000
Women	12%	11%	12%	12%	13%
Men	88%	89%	88%	88%	87%
Belem office	236	205	173	82	29
Women	47%	44%	48%	38%	38%
Men	53%	56%	52%	62%	62%
Itu	374	368	0	0	0
Women	15%	13%	-	-	-
Men	85%	87%	-	-	-
Paragominas	1357	1371	1399	1434	1381
Women	12%	13%	14%	13%	14%
Men	88%	87%	86%	87%	86%
Rio de Janeiro office	64	62	57	60	52
Women	50%	47%	51%	53%	58%
Men	50%	53%	49%	47%	42%
Tubarão	232	0	0	0	0
Women	17%	-	-	-	-
Men	83%	-	-	-	-
Utinga	239	0	0	0	0
Women	13%	-	-	-	-
Men	87%	-	-	-	-
Other locations in Brazil	9	7	9	8	6
Women	11%	14%	22%	25%	33%
Men	89%	86%	78%	75%	67%
Total Brazil	5658	5227	4743	4830	4631
Women	13%	12%	13%	12%	12%
Men	87%	88%	87%	88%	88%

GRI reference: GRI Standards 201-1 (2016) and 102-8 (2016)

The increase in number of employees is partly due to the acquisition of Arconic's two extrusion plants in Brazil.

Payroll

	2018	2017	2016	2015	2014
Payroll (BRL million)	518	450	407	370	423

GRI Reference: GRI Standards 405-1 (2016) and G4-EU15

Age distribution permanent employees

Age distribution

	2018	2017	2016	2015	2014
Under 30	16%	17%	18%	22%	24%
30-49	71%	68%	67%	63%	62%
50 +	13%	15%	15%	15%	14%

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⁾	5,658	4,848	4,732	4,817	4,624
Temporary - total	295	327	306	308	231
Women	48%	31%	40%	38%	24%
Men	52%	69%	60%	62%	76%

1) For gender of permanent employees see Note S1.1

GRI Reference: GRI Standards 405-1 (2016) and G4-EU15

Part-time employees include all persons being employed in positions that are not full-time (less than 100 percent).

Part-time employees

	2018	2017
Part-time employees ¹⁾	0.2 %	0.1 %
Women	0.4 %	0.3 %
Men	0.1 %	0.1 %

1) Data prior to 2017 is not available

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 and gender

Gender	Age								Total ¹⁾
	2018				2017				
	Total	Under 30	30-49	50+	Total	Under 30	30-49	50+	
Brazil	415	170	232	13	393	153	217	23	235
Women	22%	26%	19%	8%	9%	11%	8%	4%	19%
Men	78%	74%	81%	92%	91%	89%	92%	96%	81%

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 made on a monthly basis.

Employee turnover by age group and gender

Gender	Age								Total
	2018				2017 ¹⁾				
	Total	Under 30	30-49	50+	Total	Under 30	30-49	50+	
Brazil	11%	2%	7%	2%	6%	5%	6%	11%	6%
Women	14%	5%	8%	1%	9%	6%	9%	25%	7%
Men	11%	1%	7%	3%	6%	4%	5%	11%	6%

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 and “highest paid employee” is based on local salary systems in Brazil.

Please see note 9 to the Consolidated financial statements in Hydro’s Annual Report 2018 for more information.

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 is no significant gender-pay differentials for employees earning collective negotiated wages in Brazil.

S2.2 Highest paid employee

Highest paid employee includes fixed salary, pension, health insurance and other benefits, but excludes bonuses. Any severance pay is excluded from the highest paid employee calculation to ensure consistency.

Highest paid employee

BRL thousand	% change, 2017-18	2018	2017	2016
Highest paid employee	-59% ¹⁾	5,334	13,104	10,646

GRI-reference: GRI Standards 102-38 (2016) and GRI Standards 102-39 (2016)

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.

GRI reference: GRI Standards 202-1 (2016)

Note S3 – Diversity

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 state level for Brazil.

Local representation in senior management

Share of senior management hired from local community	2018	2017	2016	2015	2014
Paragominas, Pará	8%	9%	11%	18%	23%
Barcarena, Pará	13%	15%	21%	26%	29%
Bauxite & Alumina management team	0%	0%	0%	0%	0%

GRI-reference: GRI Standards 202-2 (2016)

Of the ten members of the Bauxite & Alumina management team in Brazil, half are Brazilian citizens.

S3.3 Diversity in workforce – people with disabilities

Brazilian Legislation requires that companies with more than 100 employees must have between 2 percent and 5 percent people with disabilities (PCD) in its workforce (depending on the number of employees). We aim at meeting the required quota, but we are aware that we still have challenges to overcome.

Diversity in workforce - people with disabilities in 2018

	Employees with disabilities	Legal requirement
Belém office	12	8
Rio de Janeiro office	N/A	N/A
Albras	39	59
Alunorte	90	94
Paragominas	67	63
Energy	N/A	N/A
Itu	11	12
Utinga	8	8
Tubarão	10	8

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
Employee Engagement Index (EEI)	90%	N/A	84%

Hydro Monitor is a tool to work with organizational development, therefore the most important part is follow-up of agreed actions. The survey results are only applicable for Hydro's Bauxite & Alumina business area. From 2020, employees from Extruded Solutions will also participate in the survey.

All units that participated in the survey in 2018 had action plans by 1 October 2018, based on their survey results.

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 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.

There are challenges in ensuring consistent reporting practice on sick leave across the company due to legislative and cultural differences between countries.

Data from the Utinga and Tubarao are not included.

	1)				
	2018	2017 ²⁾	2016	2015	2014
Total recordable injuries, lost-time injuries, fatal accidents and sick leave					
Total recordable injuries (TRI)	44	45	42	43	- ⁶⁾
Employees	14	20	14	19	- ⁶⁾
Contractors	30	25	28	24	- ⁶⁾
Total recordable injuries rate (TRI)³⁾	1.8	2.0	1.8	1.8	- ⁶⁾
Employees	1.5	2.3	1.6	1.6	2.2
Contractors	2.0	1.8 ⁴⁾	1.9	1.9	2.4
Lost-time injuries (LTI)	25	9	2	3	5
Employees	9	4	1	3	2
Contractors	16	5	1	0	3
Lost-time injuries rate (LTI)⁵⁾	1.0	0.4	0.1	0.1	0.2
Employees	0.9	0.5	0.1	0.3	0.2
Contractors	1.1	0.4 ⁴⁾	0.1	0.0	0.3
Total number of fatal accidents	0	0	0	0	0
Employees	0	0	0	0	0
Contractors	0	0	0	0	0
Sick leave, percent	2.0	2.2	2.2	2.3	- ⁶⁾

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) 2014 figures are not available

GRI-reference: GRI Standards 403-9 (2018)

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)

The most dominant types of injuries in 2018 were damages to fingers and hands, representing nearly half of all recorded injuries. Damages to face, eyes and head accounted for 20 percent of the recorded injuries, while injuries to legs, knees and feet account for about 10 percent. 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.

	2018	2017	2016	2015	2014
High risk incidents (HRI)					
High risk incidents	21	24	13	17	29
HRI rate	0.9	1.1	0.6	0.7	- ¹⁾

1) 2014 figures are not available

GRI-reference: GRI Standards 403-9 (2018)

S5.3 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

Hydro's major sites Brazil are unionized. Learn more about dialogue with the employee representatives under Dialogue with affected parties on page 21.

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					
BRL Million	2018	2017	2016	2015	2014 ¹⁾
Current income tax	140	164	352	162	128

GRI-reference: GRI Standards 201-4 (2016)

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 reports according to the Extractive Industries Transparency Initiative and Norwegian legal requirements, see Hydro's Country by country report on page 83. We also report on financial assistance from public organization related to R&D activities, see note S8.

In total, Hydro paid almost 1.5 billion NOK in taxes and fees to Brazilian authorities in 2018.

Note S8 – Research & Development (R&D)

Reporting principles

R&D expenses are collected through Hydro's financial reporting. R&D funding is gathered from Hydro's R&D centers.

Research & Development					
BRL Million	2018	2017	2016	2015	2014
Research & Development expenses	10.7	13.9	12.4	5.0	0.0
Funding received	0.4	0.0	0.0	0.0	0.0

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

BRL million	2018	2017	2016	2015	2014
Community investments ¹⁾	11	4	3	3	3
Total community investments, charitable donations and sponsorships	33	5	3	5	5

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. These are included as Charitable Donations. See the section “The Alunorte situation” in this report.

Extruded Solutions has several community investments at its sites. The nature of such projects varies with local customs and business needs. We do not 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 through 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.

The number of dismissals due to breach of Hydro policy is limited to cases reported to Hydro's Internal Audit.

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, acquired October 2017). 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, a full human rights due diligence for Hydro's operations in Pará, Brazil, is being performed in 2019.

Cases reported regarding breaches of Hydro policy

	2018
Number of cases reported through AlertLine (or similar)	192
Dismissals due to breaches of Hydro policy	4
Alleged cases of harassment	31
Alleged cases of discrimination	4
Confirmed cases of harassment	2
Confirmed cases of discrimination	0
Alleged cases of corruption, fraud, corruption and/or conflict of interest	19
Confirmed cases of corruption	0
Confirmed cases of fraud	0
Confirmed cases of conflict of interest	1

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. 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 in Hydro's Annual Report 2018.

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 DRS2 and the reduction of the production to 50 percent. The case has been referred to the Federal Court which has maintained the injunction. On May 15, 2019 the court lifted the embargo on production but maintained the embargo on DRS2.

March 03, 2018: the labor 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. On July 3, 2019, the Labor Court of Appeals ruled the case and granted Alunorte's appeal to revert the 1st Level Decision. With respect to the claim related to the reinstatement of all employees dismissed after the rainfall event, the Labor Court denied the claim and found it groundless, also denying the payment of any fine and the injunction request presented by the labor union. As to the obligation of consulting the union for any dismissal, the Labor Court of Appeals extinguished the case without analysis of the merits, based on the lifting of the embargo and, consequently the loss of purpose of this specific claim.

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 10, 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 were excluded from the lawsuit. On May 17, 2019 the Court lifted the embargo on production and maintained the embargo on DRS2.

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. Alunorte and Norsk Hydro Brasil presented their defense.

October 31, 2018: CAINQUIAMA filed a similar lawsuit as the one filed in May 15th 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. On June 07, 2016 the Court denied the injunction request made by the association.

May 03, 2019: CAINQUIMA filed another lawsuit alleging that the products used in order to refine bauxite in Brazil are more toxic than the ones used in Norway. Further, it argues that the amount of coal and heavy fuel oil consumed per year by Alunorte released into the atmosphere is harmful to the environment (as it can cause, e.g., acid rain and contamination of soil and water) and to humans (as it can cause respiratory illness and premature death). Lastly, it mentions that the ICMS tax deferral granted by the State of Para to defendants must be stayed, because Alunorte has not changed the energy source from fuel oil to natural gas as agreed with the government through one of the commitments to the ICMS agreement. The companies disputes the allegations. On June 06, 2019 the Court denied the injunction request made by the association and summoned the companies to present their defense.

Other cases

In Brazil Hydro is involved in approximately 6,000 lawsuits of which 5,300 claims related to the overflow were filed in the local court. By the end of May, 2019, 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 May 31, 2019, 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.

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.

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. On June 18th, 2019 the case was referred to the 9th Federal Court of Belém.

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, 533 employees in Brazil participated in classroom training on the topics compliance risks, Code of Conduct, Anti-corruption, sanctions and integrity. In addition, 216 employees completed e-learning courses on Hydro's Code of Conduct. In 2019, we will target our efforts towards training in Hydro's revised Code of Conduct.

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 globally 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 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 Brazil, Bauxite & Alumina performed 20 supplier audits in 2018, all included HSE and CSR related topics and resulted in a corrective action plan for the supplier. Seven suppliers with corrective action plans in place showed improved performance in 2018.

Key CSR and HSE findings from the audits were related to lack of management systems, environmental awareness, compliance controls and emergency preparedness.

Hydro has also further developed the collaboration 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. These suppliers represent in total almost 3000 employees. For more information, please see page 38.

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 a 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 applicable 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 units, in addition to Hydro's project organization, and covers consolidated activities.

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, out of a total of BRL 4 billion. Hydro's Projects' procurement organization carries out major projects mainly in Brazil and Norway. Local spend in projects carried out in Brazil 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 Hydro, a total of three full-time equivalents (FTE) are dedicated to public affairs and lobbying in Brazil, unchanged from 2017. This includes three FTEs each in Brazil. In 2018, we spent in total BRL 2.5 million, excluding salaries and office costs on public affairs and lobbying.. 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.

In addition to the mentioned ISO and OSHAS standards below, our sites are also certified according to different industry and customer specific standards. Examples of such certifications are the Aluminium Stewardship Initiative and the IATF 16949 for the automotive industry.

Sites certified	ISO 9001	ISO 14001	OHSAS 18001	ASI
Albras	Yes	Yes	Yes	No
Alunorte	Yes	Yes	Yes	Yes ¹⁾
Itu	Yes	Yes	Yes	No
Paragominas	No	No	No	Yes ¹⁾
Utinga	Yes	Yes	Yes	No
Tubarão	Yes	Yes	Yes	No

1) Certified May 2019

Of our sites delivering to the automotive industry in Brazil, all are certified according to the IATF 16949. Hydro's most energy intensive sites and operations comply with the ISO 50001 Energy Management systems.

Partnerships and commitments

GRI Standards

Hydro uses the GRI Standards for voluntary reporting of sustainable development. The standards 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.

Our GRI report for Brazil is based on Hydro's global GRI report which is externally assured by KPMG, see page 268 in Hydro's Annual Report 2018.

The GRI indexes (for Hydro global and Hydro in Brazil), 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 in Hydro's Annual Report 2018. 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. It encompasses Hydro's global activities including in Brazil. The consistency of the information in Hydro's Annual Report 2018 with the information in the Hydro Communication on Progress 2018 has been reconciled by our auditors, see page 268 in Hydro's Annual Report 2018. 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 indexes 2018, globally and for Brazil. 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 13 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.

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. Hydro's first site was certified according to the ASI performance standard in 2018. At the end of May 2019, we have so far succeeded in certifying 18 plants globally, most against the ASI Performance Standard, some against the ASI Chain of Custody Standard. Bauxite & Alumina including Alunorte and Paragominas was certified against both standards in May 2019.

Hydro reports in the GRI indexes 2018 (globally and for Brazil) 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 indexes, 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. Page references relate to the Sustainability report for Hydro's operations in Brazil 2018, or Hydro's Annual Report 2018 where this is specified.

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	Page 31 in AR18 Page 121 in AR18 Page 13 in AR18
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	Page 21-22, 121-122, 125-126 in AR18 14-15
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	Page 21-22, 127 in AR18) 14-15
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.	14
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	14-15
b) Describe the organization's processes for managing climate-related risks	Environment Energy and climate change	Page 26 in AR181) 14-15
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	Page 136 in AR181)
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 climate-related 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	Page 26 in AR181) 13 50 51-53 55-56 56- Note E4.3 on page 240 in AR181) 60
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	50 51-53
c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	Board of Directors' report Energy and climate change Resource management	82 7 Page 82 in AR181)

AR 18 refers to Hydro's Annual report 2018 available at Hydro.com/reporting2018

Country by country report

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Quick overview

This Country by country report for Hydro's global organization has been prepared according to Norwegian legal requirements due to Hydro's extractive activities in Brazil. This report also fulfills the requirements of the Extractive Industries Transparency Initiative (EITI).

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.

Hydro's exploration and extractive activities are covered by Paragominas and Norsk Hydro Brasil. On a voluntary basis, and in line with our EITI reporting since 2005, we also include the alumina refinery Alunorte. Hydro's primary aluminium

production facility Albras is also included to better illustrate the tax contribution from Hydro's aluminium value chain in Pará.

We have also chosen to include information about other tax contributions to authorities in Brazil not covered by the country by country reporting requirements. These include ICMS, PIS/COFINS and IPTU.

We are also required to report on certain information related to all legal entities worldwide. This information is also included in the report.

The report has been subject to limited assurance by KPMG and has been approved by Hydro's Board of Directors.

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 statement⁴.

⁴ In the Country by country report, all financial values are reported in NOK. The average exchange rate for 2018, on a 12 months basis, was 2.2348 NOK/BRL.

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⁾ NOK million	Royalties NOK million	License fees ³⁾ NOK million	Infrastructure, contractual ⁴⁾ NOK million	Infrastructure, voluntary ⁴⁾ NOK million	Investments NOK million	Revenue ⁵⁾ NOK million	Production volume 1 000 mt	Total expenses ^{5) 6)} NOK million
Mineracao Paragominas SA, total	104	62	2	1	0	300	2,011	6,214	1,857
Federal	58	6	2						
Pará State	46	18	-						
Paragominas municipality	-	37	-						
Norsk Hydro Brasil Ltda, total	17	-	0	1	6	8	15	-	49
Federal	17	-	0						
Rio de Janeiro State	-	-	-						
São Paulo Municipality	-	-	-						
Alunorte - Alumina do Norte do Brasil SA, total	69	-	-	10⁸⁾	13	659	9,333	3,712	11,280
Federal	52	-	-						
Pará State	17	-	-						
Barcarena Municipality	-	-	-						
Albras - Alumínio Brasileiro SA, total	204	-	-	-	3	361	7,261	250	6,929
Federal	204	-	-						
Pará State	0	-	-						
Barcarena Municipality	-	-	-						
Total⁷⁾	394	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.

5) Including power procurement and sales

6) Costs at Alunorte include purchase of bauxite from Paragominas. Costs at Albras include 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 is 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	0	0	0	25
Federal	-	-	-	-	-
Pará State	25	0	0	0	25
Paragominas municipality	-	-	-	-	-
Norsk Hydro Brasil Ltda, total	1	0	0	0	2
Federal	-	-	-	-	0
Rio de Janeiro State	1	0	0	0	2
São Paulo Municipality	-	-	-	-	0
Alunorte - Alumina do Norte do Brasil SA, total	355	0	0	12	366
Federal	-	-	-	-	0
Pará State	355	0	0	0	366
Barcarena Municipality	-	0	0	12	0
Albras - Alumínio Brasileiro SA, total	363	20	92	11	486
Federal	-	20	92	0	486
Pará State	363	0	0	0	0
Barcarena Municipality	-	0	0	11	0
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	-	0	-306
	Hydro Aluminium Kurri Kurri Pty. Limited	Real estate	100%	9	-	-	40	40	-	0	-1,957
Total Australia				9	-	-	1,366	-27	0	0	-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%	-	-	-	0	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%	-	-	-	0	0	0	0	0
	Hydro Building Systems Belgium NV	Building systems production	100%	221	3	-	460	0	-8	0	-174
	Hydro Extrusion Lichtervelde NV	Precision tubing production	100%	186	-	-	1,529	47	19	0	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	0	0	0	1
	Hydro Extrusion Eupen SA (previously Sapa Extrusion EXPA S.A)	Dies production	100 %	54	-	-	81	-26	-8	0	111
	Hydro Precision Tubing Lichtervelde NV (previously Sapa Precision Tubing Lichtervelde NV)	Precision tubing production	100%	179	5	-	531	-14	5	0	85
	Sapa Precision Tubing Seneffe S.A.	<i>Entity is dormant</i>	100%	-	-	-	0	0	0	0	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	204	2,981
	ALUNORTE - Alumina do Norte do Brasil S.A.	Alumina refinery	92.1 %	1,922	105	37	9,333	-3,345	-1,000	52	2,473
	Ananke Alumina SA	Local holding company	100%	-	-	-	28	30	10	24	1,645
	Atlas Alumina SA	Local holding company	100%	-	-	-	274	267	90	110	401
	Calypso Alumina SA	Local holding company	100%	-	-	-	0	0	0	0	-1
	CAP - Companhia de Alumina do Pará SA	Planned alumina refinery	81%	-	-	-	0	-13	0	0	-398

	Hydro Extrusion Brasil S.A. (previously 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	0	-31
	Mineração Paragominas SA	Bauxite mining	100%	1,359	58	-	2,011	215	72	58	810
	Norsk Hydro Brasil Ltda.	Local holding company	100%	358	41	-	15	-36	4	17	-415
	Norsk Hydro Energia Ltda.	Power trading & Energy services	100%	-	-	-	987	5	2	0	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	0	0	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	0	0	-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	<i>Entity is in liquidation</i>	100%	-	-	-	0	0	0	0	-5
	Sapa Extrusion (Jiangyin) Co. Ltd.	Precision tubing production	100%	-	-	-	0	-1	0	0	-27
	Sapa Extrusion (Shanghai) Company Ltd.	Precision tubing production	100%	199	-	-	294	44	13	9	143
	Sapa (Shanghai) Management Co. Ltd.	<i>Entity is in liquidation</i>	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.	<i>Entity dissolved in 2018</i>	-	-	-	-	0	0	0	0	0
Total Croatia				0	-	-	0	0	0	0	0
Czech Republic	Hydro Building Systems Czechia s.r.o. (previously Sapa Building Systems sro)	Sales company	100%	6	-	-	7	0	0	0	1
Total Czech Republic				6	-	-	7	0	0	0	1
Denmark	Datoselskabet af 23.august 2016 A/S under frivillig likvidation	<i>Entity liquidated in 2018</i>	100%	-	-	-	0	0	0	2	0
	Hydro Aluminium Rolled Products Denmark A/S	Sales company	100%	2	-	-	4	1	1	0	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%	-	-	-	0	-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	0	0	10
Total Estonia				12	-	-	56	1	0	0	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	-	-	0	0	0	-1	0
	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	0	0	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%	-	-	-	0	0	0	0	0
	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%	-	-	-	0	0	0	0	0
	Hydro Holding France SAS ¹²⁾	Local holding company	100%	-	-	-	1	107	-21	115	-305
	Hydro Laquage Albi SAS ¹¹⁾	Sales company	100%	74	-	-	0	0	0	0	0
	Hydro Tool Center SAS	Tool and spare parts services	100%	5	-	-	43	1	0	0	4
	Sapa Building Systems Puget SAS ¹⁰⁾	Entity is dissolved in 2018	100%	-	-	-	0	0	0	0	0
	Sapa Shared Service Center France I.T.C s.n.c	IT shared services	100%	-	-	-	20	1	0	-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	0	0	5
	Hydro Aluminium Gießerei Rackwitz GmbH	Remelter	100%	-	-	-	1,066	87	0	0	29
	Hydro Aluminium High Purity GmbH	High-purity aluminium production	100%	-	-	-	296	-13	-3	0	54
	Hydro Aluminium Recycling Deutschland GmbH	Remelter	100%	161	38	-	68	14	-1	0	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	0	120
	Hydro Energy GmbH	Energy sourcing	100%	-	-	-	5	4	0	0	108
	Hydro Extrusion Deutschland GmbH	Extrusion production	100%	424	-	-	1,764	51	1	0	116
	Hydro Extrusion Offenburg GmbH	Extrusion production	100 %	226	-	-	676	10	1	0	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%	-	-	-	0	0	0	0	-2
	Sapa Building Systems Germany GmbH ⁹⁾	Building systems production	100%	-	-	-	0	0	0	0	0
	Sapa Germany GmbH (previously Hydro Holding ULM GmbH)	Local holding company	100%	-	-	3	0	-17	23	5	87
	SEGN Standort-Entwicklungs-Gesellschaft Nabwerk mbH	Real estate	100%	-	-	-	0	0	0	0	0
	VAW-Innwerk Unterstutzungs-Gesellschaft GmbH	Pension fund	77.5 %	-	-	-	0	-1	1	0	219
	Total Germany			4,569	401	3	28,059	57	54	43	9,517
Greece	Hydro Building Systems A.E.	<i>Entity is in liquidation</i>	100%	-	-	-	0	0	0	0	-34
	Total Greece			-	-	-	0	0	0	0	-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	0	0	-21
	Sapa Building Systems Pvt. Ltd.	<i>Entity is dormant</i>	100%	-	-	-	0	0	0	0	-41
	Sapa Extrusion India Pvt. Ltd.	Precision tubing production	100%	359	-	-	423	4	23	0	-368
	Sapa Precision Tubing Pune Pvt. Ltd.	Precision tubing production	100%	50	-	-	63	1	0	0	-1
	Total India			439	-	-	515	-8	23	0	-432
Italy	Hydro Aluminium Metal Products S.r.l.	Sales company	100%	2	-	-	8	1	0	0	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%	-	-	-	0	0	0	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	-	-	-	-	0	0	0	0	0

Total Japan				4	2	-	231	10	4	7	62
Latvia	Hydro Extrusion Latvia SIA	<i>Entity is in liquidation</i>	100%	-	-	-	6	0	0	0	-5
Total Latvia				-	-	-	6	0	0	0	-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	0	-	-	-	0	0	0	0	0
	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	0	1	0
Total Mexico				329	-	-	189	16	8	4	140
Mozambique	Sapa Building Systems Moçambique Lda	<i>Entity divested in 2018</i>	100%	-	-	-	1	7	0	0	0
Total Mozambique				-	-	-	1	7	0	0	0
Netherlands	Hydro Albras B.V.	Local holding company	100%	-	-	-	0	166	0	0	-2
	Hydro Aluminium Brasil Investment B.V.	Local holding company	100%	-	-	-	0	-12	0	0	916
	Hydro Aluminium Investment B.V.	Local holding company	100%	-	-	-	0	4	0	0	0
	Hydro Aluminium Netherlands B.V.	Local holding company	100%	-	-	-	0	1,148	0	0	225
	Hydro Aluminium Pará B.V.	Local holding company	100%	-	-	-	0	0	0	0	-126
	Hydro Aluminium Qatalum Holding B.V.	Local holding company	100%	-	-	-	0	1,166	0	0	893
	Hydro Aluminium Rolled Products Benelux B.V.	Sales company	100%	4	-	-	5	1	0	0	3
	Hydro Alunorte B.V.	Local holding company	100%	-	-	-	0	67	0	0	-1
	Hydro Building Systems Netherlands B.V.	Building systems production	100%	-	-	-	40	5	0	0	-3
	Hydro CAP B.V.	Local holding company	100%	-	-	-	0	0	0	0	-405
	Hydro Extrusion Drunen B.V.	Extrusion production	100%	410	14	-	1,579	29	-2	0	857
	Hydro Extrusion Holding Netherlands B.V. (previously Fintuna Holding (Nederland) B.V.)	Real estate	100%	-	-	-	1	-10	-4	0	-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	0	-9	-8	-6	58

	Hydro Paragominas B.V.	Local holding company	100%	-	-	-	0	246	0	0	-4
	Norsk Hydro Holland B.V.	Local holding company	100%	4	-	-	14	3,638	0	0	9,001
	Sapa Holdings (Nederland) B.V.	<i>Entity is dormant</i>	100%	-	-	-	0	0	0	0	0
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%	-	-	-	0	0	0	0	0
	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	0	53
	Hydro Invest Porsgrunn AS	Local holding company	100%	-	-	-	0	0	0	0	2
	Hydro Kapitalforvaltning AS	Local holding company	100%	-	-	-	11	0	0	0	0
	Hydro Vigelands Brug AS	High-purity aluminium production	100%	34	1	-	85	9	2	0	74
	Hydro Vigelandsfoss AS	Power production	100%	-	-	-	78	44	21	7	203
	Industriforsikring AS	Insurance	100%	-	-	-	164	10	2	0	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%	-	-	-	0	0	0	0	1
	Sør-Norge Aluminium AS	Primary aluminium production	100%	271	88	-	2,617	66	21	0	958
	Vækerø Gård Barnehage ANS	Company kindergarden	100%	-	-	-	0	0	0	0	0
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	0	0	1
	Hydro Building Systems Poland Sp. z o.o. (previously Sapa Building Systems Sp. z o.o.)	Sales company	100 %	55	-	1	148	0	0	0	-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	0	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	0	-160
Total Romania				244	-	1	514	-30	1	0	-160

Russian Federation	OOO Sapa Building Systems	<i>Liquidated in 2018</i>	-	-	-	-	0	0	0	0	0
Total Russian Federation				-	-	-	0	0	0	0	0
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	0	0	5
	Hydro Holding Singapore Pte. Ltd.	Sales and local holding company	100%	17	-	-	49	0	0	0	-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	0	0	4
Total Slovakia				885	-	-	4,514	368	80	73	678
South Africa	Technal Systems South Africa (Pty) Ltd.	<i>Entity is in liquidation</i>	100%	-	-	-	0	-2	0	0	-13
Total South Africa				-	-	-	0	-2	0	0	-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	0	22
	Hydro Extruded Solutions Holding S.L.U.	Local holding company	100%	46	1	-	38	0	0	0	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	0	0	0	6
	Hydro Building Systems Sweden AB	Building systems production	100%	111	2	-	657	86	0	0	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	0	668
	Sapa China Holding AB	Local holding company	100%	-	-	-	0	0	0	0	0
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	0	66
	Hydro Aluminium Walzprodukte AG	Sales company	100%	3	-	-	4	1	0	0	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	<i>Entity is in liquidation</i>	100%	-	-	-	0	0	0	0	0

Total Ukraine				-	-	-	0	0	0	0	0
United Arab Emirates	Hydro Building Systems Middle East FZE	Sales company	100%	15	-	-	173	24	0	0	43
Total United Arab Emirates				15	-	-	173	24	0	0	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	0	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	0	-7	-71
	Sapa Aluminium Extrusion Ltd.	<i>Entity dissolved in 2018</i>	100%	-	-	-	0	0	0	0	0
	Sapa Building Systems (Wakefield) Ltd.	<i>Entity dissolved in 2018</i>	100%	54	-	-	0	0	0	0	0
	Sapa UK Ltd.	<i>Entity is dormant</i>	100%	-	-	-	0	0	0	0	0
Total United Kingdom				1,229	1	2	3,828	-254	-20	3	474
USA	EMC Ashtabula Inc	<i>Entity is dormant</i>	100%	-	-	-	0	-9	-2	0	-2,002
	EMC Metals Inc	Local holding company	100%	-	-	-	0	-9	3	0	378
	Hydro Aluminium Metals USA, LLC	Local holding company	100%	140	2	-	5,845	180	3	0	-1,576
	Hydro Aluminium Tomago Inc.	Local holding company	100%	-	-	-	0	0	0	0	-174
	Hydro Building Systems North America Inc. (previously Hydro Aluminium USA Inc.)	Sales company	100%	-	-	-	0	0	0	0	0
	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	0	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%	-	-	-	0	-34	0	0	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%	-	-	-	0	76	-140	49	215
	Hydro Metals Holding US LLC	Local holding company	100%	-	-	-	0	106	5	0	101
	Hydro Precision Tubing Adrian Inc.	<i>Entity is dormant</i>	100%	-	-	-	0	-5	0	0	-298
	Hydro Precision Tubing Louisville Inc.	<i>Entity is dormant</i>	100%	-	-	-	0	0	0	0	-70
	Hydro Precision Tubing Monterrey Central LLC (previously Sapa Precision Tubing Central LLC)	Precision tubing production	100%	-	-	-	0	0	0	0	0
	Hydro Precision Tubing Monterrey LLC (previously Sapa Precision Tubing LLC)	Precision tubing production	100%	-	-	1	474	61	13	0	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%	-	-	-	0	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 in Hydro's Annual Report 2018

4) For a description and the composition of income taxes, please refer to consolidated income statements and related notes in Hydro's Annual Report 2018

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

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

Additional information

Terms and definitions

Alunorte	The world's largest Alumina refinery outside China, situated in Barcarena in Northern Brazil. Hydro owns 92 percent
BRC	Biodiversity Research Consortium Brazil-Norway
BRL	Brazilian reals
B&A	Hydro's Bauxite & Alumina business area
CO ₂ equivalents (CO ₂ e)	A measure used to compare the emissions from various greenhouse gases based upon their global warming potential
Company	Norsk Hydro ASA, a Norwegian public company limited by shares, or Norsk Hydro ASA and its consolidated subsidiaries, as the context requires
Consolidated Financial Statements	The consolidated financial statements and notes included in the Company's annual report 2018 to shareholders
Corporate Management Board	The corporate management board established by the Company's President and Chief Executive Officer to assist him in discharging his responsibilities
CSBI	The Cross-Sector Biodiversity Initiative is a joint effort between ICMM (the mining industry), IPIECA (the petroleum industry) and the Equator Principles Association.
CSR	Corporate Social Responsibility
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
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 in Brazil, unless otherwise stated
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
ICMM	International Council on Mining and Metals
IFC	International Finance Corporation
ILO	International Labor Organization
IPIECA	International Petroleum Industry Environmental Conservation Association. Global non-profit oil and gas industry association for environmental and social issues
MACN	Maritime Anti-Corruption Network
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
PACI	World Economic Forum's Partnering Against Corruption Initiative
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
TI	Transparency International
TWh	Terawatt hour (one billion kilowatt hours)
WBCSD	World Business Council for Sustainable Development
Worker	Person that performs work directly or indirectly for the company. It includes, but is not limited to, employees



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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.