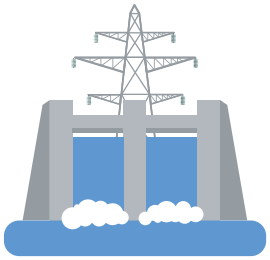
2017 Alcoa Sustainability Report

Alcoa

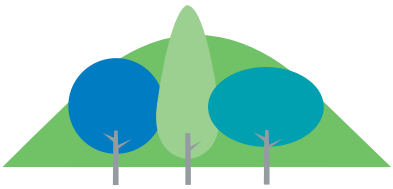
Alcoa Sustainability Performance 2017

10.9% reduction in carbon dioxide equivalent emissions

5.7% reduction in energy consumption



75% of electricity consumed by our smelters was from renewable sources



1.01:1 ratio for new active mining disturbance to mine rehabilitation

4.9% increase in landfilled waste

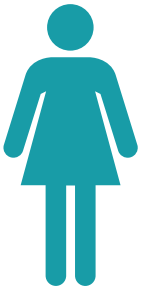
2% improvement in bauxite residue storage efficiency

382,000 metric tons of scrap recycled

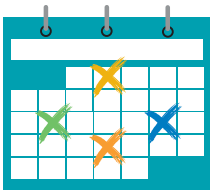
3% increase in freshwater-use intensity

100 (perfect) score on the Corporate Equality Index 2018

14.5 percent of our global employees were women



3 contractor fatalities



0.66 days away, restricted and transfer rate per 100 full-time workers

US$9.5 billion in purchased goods and services

US$5.8 million in community investments

5,600 employee volunteer hours in the community

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Materiality

Throughout this report, materiality refers to the list of sustainability topics about which Alcoa communicates because they are material for our stakeholders in this context. It should not be confused with materiality for financial or regulatory purposes.

Forward-looking Statements

Certain statements in this document by Alcoa relate to future events and expectations and, as such, constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include those containing such words as "anticipates," "believes," "could," "estimates," "expects," "forecasts," "intends," "may," "outlook," "plans," "projects," "seeks," "sees," "should," "targets," "will," "would," or other words of similar meaning. All statements that reflect Alcoa's expectations, assumptions or projections about the future, other than statements of historical fact, are forward-looking statements. Forward-looking statements are not guarantees of future performance and are subject to known and unknown risks, uncertainties and changes in circumstances that are difficult to predict. Although Alcoa believes that the expectations reflected in any forward-looking statements are based on reasonable assumptions, it can give no assurance that these expectations will be attained, and it is possible that actual results may differ materially from those indicated by these forward-looking statements due to a variety of risks and uncertainties. Additional information concerning factors that could cause actual results to differ materially from this projected in the forward-looking statements is contained in our filings with the U.S. Securities and Exchange Commission. Alcoa disclaims any obligation to update publicly any forward-looking statements, whether in response to new information, future events or otherwise, except as required by applicable law.

From the CEO

Our first full year as Alcoa Corporation was one of reflection and transition as we determined where and how we wanted to succeed as an independent company. An important part of this effort was to sharpen and better connect our sustainability focus to our corporate objectives.

During 2017, we reviewed our approach to sustainability, performing an in-depth materiality analysis and a comprehensive evaluation of our strategic long-term goals. The results of that analysis, presented in this report, confirm that we are focused on the right issues. Therefore, we have set new long-term goals that better reflect our challenges, opportunities and global footprint as Alcoa Corporation.

Most importantly, we will further strengthen our commitment to safety. Three people working at our facilities lost their lives in 2017. Advancing safety within our company is my personal commitment, and we will be instituting cultural and systemic changes to achieve this. No one should ever lose his or her life while working in one of our facilities.

Across our global business, we will remain focused on reducing risks and maintaining our reputation as a good corporate citizen through responsible and sustainable practices and active engagement with stakeholders. Our material topics and strategic long-term goals will help reduce our exposure in areas like safety and health, greenhouse gas emissions, waste, mine rehabilitation and more.

Enhancing the value of our mined and manufactured products through differentiation was also a key component of our sustainability approach in 2017. Our SUSTANA™ line of aluminum products, produced with low carbon emissions and recycled aluminum content, is one recent example. We also actively contributed to the development of the Aluminium Stewardship Initiative's certification program for the aluminum value chain. Launched in December 2017, the program is focused on responsible production, sourcing and stewardship of aluminum.

Demonstrating our commitment to continue innovating, Alcoa and Rio Tinto announced in May 2018 a revolutionary process to make aluminum that produces oxygen and eliminates all direct greenhouse gas emissions from the traditional smelting process. This discovery has been long sought in the aluminum industry and is the culmination of the work from many dedicated Alcoa employees.

Our progress is being noticed. We were named to the Dow Jones Sustainability Index in 2017—the first year as Alcoa Corporation, building on the leadership of our former parent company. We also earned a perfect score on the Human Rights Campaign Foundation's Corporate Equality Index 2018, which is a national benchmark survey and report on corporate policies and practices related to lesbian, gay, bisexual, transgender and queer workplace equality.

We are proud of our achievements, yet our work will continue. I thank our stakeholders for supporting and challenging us to do even better. We look forward to continued collaboration in our sustainability journey.

Roy C. Harvey
President and Chief Executive Officer
Alcoa Corporation

Our Company

Corporate Overview

Alcoa is a global industry leader in bauxite, alumina and aluminum products. Our company is built on a foundation of strong Values and operating excellence dating back nearly 130 years to the world-changing discovery that made aluminum an affordable and vital part of modern life.

FOUNDED
November 1, 2016
when Alcoa Inc. separated into Alcoa Corporation and Arconic Inc

GLOBAL HEADQUARTERS
Pittsburgh, Pennsylvania, USA

VALUES
Act with Integrity. Operate with Excellence. Care for People.

2017 revenue
$11.7 billion

2017 net income
$217 million

2017 employees
14,600

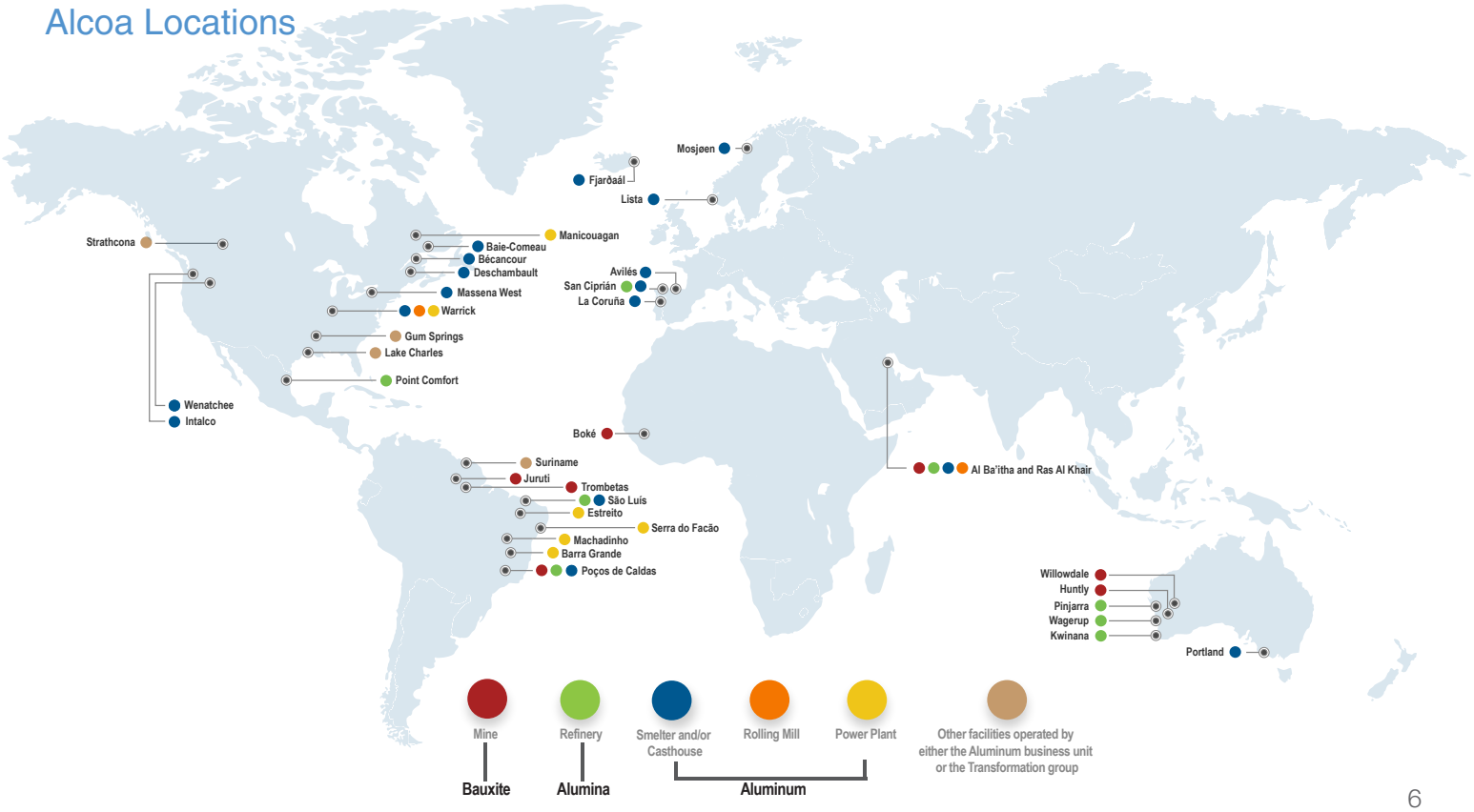
Business Segments

Bauxite: We have ownership in seven active bauxite mines globally and operate four of them in Australia and Brazil. 2017 bauxite production: 45.8 million dry metric tons.

Alumina: We are a world leader in the production of alumina, operating seven refineries in Australia, Brazil, Spain and the United States. 2017 alumina production: 13.1 million metric tons.

Aluminum: This segment includes aluminum smelting, casting and rolling, along with the majority of our energy assets. 2017 primary aluminum production: 2.3 million metric tons.

Alcoa Locations



Value Creation Process

By transforming natural resources into aluminum, we create value for our stockholders, customers, suppliers and communities in which we operate. It is critical to balance the inputs and outputs to maximize the benefits and minimize the impacts of our processes.

The following simplified analysis of our value creation process identifies our key inputs, outputs and effects on stakeholders. We used this analysis to help determine our material topics.

PRODUCTION PROCESS

General Aspects Applicable to All Processes	Bauxite Mining 86% internal consumption, 14% third-party shipments
KEY INPUTS	
Financial resources; technology; labor; knowledge and skills; environment, health and safety systems; stakeholder engagement; impact assessment; strong governance; infrastructure	Bauxite reserves; land surface; water; energy
KEY OUTPUTS	
Salaries; taxes; stockholder value; job creation and stable job base; skilled employees; environmental footprint; information to stakeholders	Bauxite; royalties; wastewater; air emissions; noise; rehabilitated land
KEY EFFECTS	
Income stability for families and communities; professional development; local enterprise development; improved quality of life; environmental impact; company right to grow; higher value for stockholders	Export revenue generation; potential community relocation; biodiversity disturbance; changes to landscape





PRODUCTION PROCESS

Alumina Refining	Aluminum Production	Energy Generation
33% internal consumption, 67% third-party shipments	100% third-party shipments	30% internal consumption, 70% third-party watt hours

KEY INPUTS

Bauxite; water; caustic soda; lime; energy	Alumina; energy; aluminum fluoride; coke and pitch; aluminum scrap; water; oils and lubricants; packaging material	Water; coal; land surface; distribution infrastructure

KEY OUTPUTS

Alumina; bauxite residue; greenhouse gas emissions; other air emissions; noise	Aluminum metal; greenhouse gas emissions; fluoride, sulphur dioxide and other emissions; spent pot lining; aluminum dross; volatile organic compounds	Electricity; water dam; rehabilitated land; fly ash; greenhouse gas emissions; combustion emissions

KEY EFFECTS

Export revenue generation; changes to landscape; environmental disturbances; research and development opportunities	Potential effects on local vegetation; contribution to climate change; development of recycling industry; product development (alloys); greenhouse gas reduction through product life cycle	Effects on the landscape; contribution to climate change; land disturbance; biodiversity impacts; decoupling from energy market; potential community relocation

Data are approximate. Alcoa's three business units are Bauxite, Alumina and Aluminum. The latter includes aluminum smelting, aluminum casting, aluminum rolling and a majority of energy generation.

Sustainability at Alcoa

Sustainability Approach

Throughout the world, sustainability drives us to minimize our impacts and maximize our value.

Our approach is rooted in the strong sustainability vision of our former parent company, Alcoa Inc., which made a public commitment to society in the 1950s with the formation of a charitable foundation and to the environment in the 1990s through setting, achieving and reporting on ambitious goals. In recognition, Alcoa Inc. was consistently named to the Dow Jones Sustainability Indices.

This is our heritage. It has earned Alcoa Corporation the credibility and trust to mine bauxite in two of the most protected areas on the planet—the Brazilian Amazon and the jarrah forest in Western Australia. It guides us as we operate in countries with weak or differing rules of law. It keeps us in good standing with governments and communities to ensure access to competitive, long-term energy contracts. It also enhances our long-term license to operate.

"Over the many years that we have been working in partnership with Alcoa and the Alcoa Foundation, they have lent their practical experience on issues such as materiality and standardized reporting to the GRI network and advanced better practice worldwide. Going forward, we will focus on a mutual priority—engaging investors on material issues related to the climate and other global challenges, and bringing the power of transparency and data to bear on these global issues."

Alyson Slater
Chief of Network Engagement
GRI

Building on this foundation, our current sustainability approach delivers value through the following three pillars:

- Creating sustainable value for the communities where we operate, with the aim to maintain our license to operate with opportunities to grow our businesses;
- Enhancing the value of our products through differentiation to improve our profitability; and
- Minimizing our environmental impacts and improving our health and safety performance to reduce our risk exposure.

By taking action toward our three pillars, we will be supporting our corporate strategic priorities—reducing the complexity of our organization, driving stockholder returns and strengthening our balance sheet.

Reduce complexity

Drive returns

Strengthen the balance sheet

Our long-term sustainability goals help guide our actions. During 2017, an extensive internal review of our significant sustainability topics determined that we are focused on the appropriate material topics but needed new goals that better align with our sustainability challenges as Alcoa Corporation. These goals, which will be implemented in 2018, cover the environment, our employees and the communities in which we operate. (See the Strategic Long-term Goals section.)

Creating Sustainable Value

We actively participate in every community in which we operate around the world. We want these communities to thrive, and we view our presence as an opportunity to help develop and enable economic activity, environmental practices and social programs that will stay in place after our role ends.

Alcoa Foundation operates globally and focuses its investments on promoting the prevention of, and resilience to, climate change from human activity, as well as the restoration and preservation of biodiversity. Instituto Alcoa, our foundation in Brazil, funds strategic projects focused on education, health, environment, security and job creation in the Brazilian communities where we operate. In addition, each of our locations uses the Stakeholder Engagement Framework to work with stakeholders to identify local opportunities for value creation. (See the Stakeholder Engagement section.)

A good example of delivering shared value is our Juruti mine in the heart of the Brazilian Amazon. In partnership with local stakeholders, we developed a three-pronged approach to

improve the economic, environmental and social aspects of this geographically isolated region.

The Sustainable Juruti Council brings together representatives from the private sector, government and civil society to guide and manage the overall sustainability agenda of the Juruti region. The Sustainable Juruti Fund allocates resources to be invested in sustainable initiatives proposed by the community. The council uses community-developed sustainability indicators to monitor local development.

In 2007, when Alcoa entered this region of almost 35,000 people who live in mainly rural communities, the average per capita income was US$23 per month, the illiteracy rate was 21 percent and the Human Development Index (HDI) was 0.389. The economy was based on fishing, cattle-raising, Brazilian nut extraction and subsistence agriculture. There was minimal health care, with many residents traveling up to 12 hours by boat to get needed medical attention. Educational, governmental and transportation infrastructure was non-existent or in need of extensive repair.

A decade later, the region has high-paying mining jobs, a thriving service industry, a community hospital, additional classrooms and elementary school, paved roads, a courthouse, government offices, deep water wells to provide freshwater, a cultural center and more. Per capita income has more than doubled, the illiteracy rate is 9.75 percent and the HDI is 0.592.

Enhancing Product Value

The global markets in which we compete are increasingly driven by significant challenges, including population growth, urbanization, climate change and resource scarcity. Inherently sustainable, aluminum helps our customers address these challenges and capture the opportunities they present.

Aluminum enables safer and more energy-efficient buildings; more fuel-efficient cars, trucks and airplanes; and sustainable food and beverage packaging. It is also infinitely recyclable, reducing energy and resource consumption and emissions compared to primary aluminum.

In late 2016, we introduced our SUSTANA line of aluminum products, which is produced with low carbon emissions and recycled content. This platform will allow us to position and differentiate our innovative, value-added products moving forward. (See the Products and Differentiation Strategy sections.)

We also will consider certifying our value chain against the sustainability standards developed by the Aluminium Stewardship Initiative (ASI) at the end of last year. We have been an active member of ASI since 2015, initially through Alcoa Inc. and now as Alcoa Corporation. Our vice president of sustainability is a member of the Standards Setting Committee, which is the multi-stakeholder body charged with defining the standards.

Improving Our Footprint

Despite technological and process advancements, aluminum production remains energy- and resource-intensive and also impacts the natural and workplace environments.

Guiding our efforts in 2017 were ambitious 2020 and 2030 targets for emissions, energy, waste, water, diversity, safety and health. Our approach and performance for each can be found in the individual sections within this report.

We also serve as stewards of the land, operating in a manner that focuses on minimizing our impacts and maximizing ongoing sustainable use. Biodiversity management plans, industry-leading mining and mine rehabilitation processes and asset management that covers a facility's entire life cycle help us optimize our land and facility management and support our license to operate. (See the Biodiversity and Mine Rehabilitation and Facility Stewardship and Transformation sections.)

Related Information

Strategic Long-term Goals
Risks, Opportunities and Challenges

Reporting and Materiality

We are committed to transparent and thorough reporting on our sustainability performance.

We base the content of our sustainability reporting primarily on the requirements of the Global Reporting Initiative's GRI Standards and the expectations of our stakeholders. The information covers all global operations where we have financial and/or operational control, unless otherwise noted.

In 2017, we conducted a four-step analysis to determine our material topics.

Step One

The starting point of our analysis was our Value Creation Process, where we identify the key inputs and outputs of our production processes and their effects on our stakeholders.

Step Two

We gathered information from different stakeholders on their interests and concerns using the following:

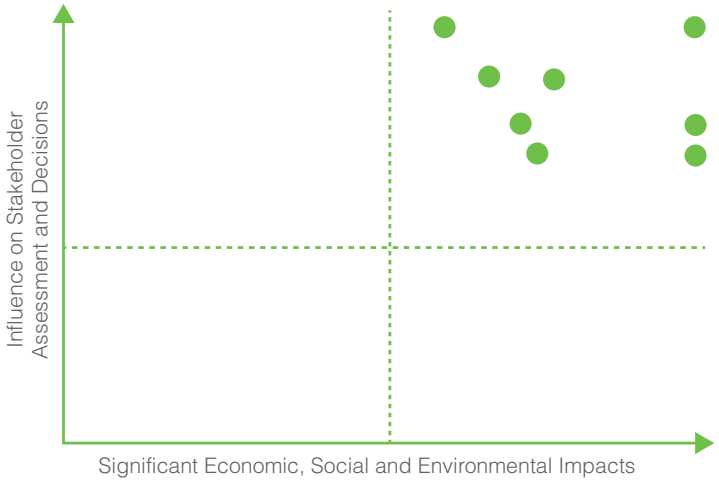
- Outcomes of stakeholder engagement at the location level through the Alcoa Community Framework and community advisory boards;
- Formal and informal customer feedback and sustainability questionnaires;
- Key issues identified by industry organizations;
- Ongoing engagement with governmental and non-governmental organizations (NGOs);
- Issues evaluated by leading sustainability ranking organizations, such as the Dow Jones Sustainability Indices and CDP;
- Regulatory developments and trends in the various regions where we operate;
- Media coverage; and
- External standards and initiatives that we follow or endorse, including the Aluminum Stewardship Initiative, United Nations Global Compact, Business Roundtable Principles of Corporate Governance, International Organization for Standardization, International Aluminium Institute Sustainability Principles and Recommendations of the Task Force on Climate-related Financial Disclosures.

Step Three

Our leadership discussed how sustainability can support the company's business strategy, as well as how changes in the business can influence the sustainability of our products and processes.

Step Four

We prioritized stakeholder input and our key business challenges using the following matrix.



We have identified the eight topics in the upper right quadrant as material, and they form the basis for our sustainability reporting. Topics that fall in the other quadrants are managed through other channels.

2017 Material Topics

Material Topic	Boundary
Economic Performance	Communities surrounding our operating locations, stockholders, lenders, financial analysts and investors globally
Greenhouse Gas Emissions	Communities surrounding our operating locations, government agencies and NGOs
Energy	Communities surrounding our operating locations, government agencies and NGOs
Water	Communities surrounding our operating locations (especially those in water-stressed regions of the world), government agencies and NGOs
Waste	Communities surrounding our operating locations, government agencies and NGOs
Biodiversity	Communities surrounding our operating locations, government agencies and NGOs
Health and Safety	Communities surrounding our operating locations and government agencies focused on health and safety in each country in which we operate
Local Communities	Communities surrounding our operating locations and NGOs

Assurance

First Environment provided limited assurance on our total 2017 Scope 1 and Scope 2 greenhouse gas emissions data (under the ISO 14064, Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions) and verified the accuracy of the energy data used as a basis for the calculation of these emissions. First Environment also provided limited assurance on our Scope 3 emissions for six categories— purchased goods and services; fuels and energy related activities; waste generated in operations; business travel; product transportation and distribution (downstream); and processing of intermediate products sold to customers. (View the limited assurance verification statement.)

We also have developed an environmental product declaration (EPD) covering the ECOLUM™ family of cast products. The information has been certified by UL, a third-party assessor. (View the EPD.)

For the remaining information, we rely on our stringent internal controls and management systems to ensure what we report is accurate and representative of our operations.

Strategic Long-term Goals

Our sustainability approach is driven by—and measured against—our strategic long-term goals, which help us integrate sustainability seamlessly into our business processes to minimize our environmental impacts and maximize our value.

Throughout this report, we provide updates on our performance against goals that we carried forward from Alcoa Inc. Following a materiality analysis we undertook in 2017, we reviewed and updated these goals to ensure that we are focused on the material sustainability issues and strategic priorities of Alcoa Corporation and providing appropriate stretch goals to address them. (See the Reporting and Materiality section.)

The table below summarizes the progress we achieved during 2017 against our existing goals and provides the new goals that we will be measuring and reporting against from 2018 onward.

Many of the new goals contain a quantifiable target. For those that do not, we will continue gathering the information we need to determine appropriate 2025 and 2030 targets. We will finalize these targets by 2020.

Sustainability Long-term Goals

Existing Goal	Performance Achieved through Year-end 2017	New Goal (2018 onward)
From a 2005 baseline, a 30 percent reduction in total (direct and indirect) carbon dioxide equivalent emissions intensity by 2020; 35 percent by 2030	46.5 percent	From a 2015 baseline, reduce our GHG footprint (direct and indirect emissions) from our smelting operations by 15 percent by 2025 and 20 percent by 2030 More
From a 2005 baseline, a 10 percent reduction in energy intensity by 2020; 15 percent by 2030	5.7 percent	(Partially incorporated in the carbon dioxide goal through indirect emissions.) More
From a 2005 baseline, a 25 percent reduction in average freshwater-use intensity by 2020; 30 percent by 2030	11.1 percent	Define and implement a program focused on enhancing water-use efficiency at locations in water-scarce areas by 2020; define specific water-use reduction targets for 2025 and 2030 More
From a 2005 baseline, a 75 percent reduction in landfilled waste by 2020; 100 percent by 2030	44.1 percent	Optimize our portfolio of economically viable placement opportunities for byproduct materials (from waste to value) by 2020; define specific objectives to be achieved by 2025 and 2030 More
Rehabilitate 30 percent of total bauxite residue storage area by 2020; 40 percent by 2030	18 percent	From a 2015 baseline, reduce bauxite residue land requirements per metric ton of alumina produced by 15 percent by 2030 More
Recycle or reuse 15 percent of bauxite residue generated by 2020; 30 percent by 2030	0	

Sustainability Long-term Goals		
Existing Goal	Performance Achieved through Year-end 2017	New Goal (2018 onward)
		Maintain a corporate-wide running five-year average ratio of 1:1 or better for active mining disturbance (excluding long-term infrastructure) to mine rehabilitation More
Zero fatalities	Three fatalities in 2017 (all contractors)	Zero fatalities and serious injuries (life-threatening or life-altering injuries and illnesses) More
Women at all levels comprise 14.5 percent of our global workforce	14.6 percent	Attain an inclusive everyone culture that reflects the diversity of the communities in which we operate More
Forty percent of employees volunteer in the community through community service projects sponsored by operating locations or Alcoa Foundation	15.1 percent	Reassess the implementation of key stakeholder engagement tools by 2020; define shared value creation opportunities to be implemented by 2025 and 2030. More

Related Information

Sustainability Approach
Reporting and Materiality

Opportunities, Challenges and Risks

Inherently lightweight, durable and infinitely recyclable, aluminum is well-positioned to capture opportunities that address climate change, urbanization, mobility and other global megatrends. The challenge is doing so without negating the positive impact, as aluminum production is energy- and resource-intensive and a major emitter of greenhouse gases.

Key Opportunities: We have significant opportunities to grow our business and further embed sustainability within our operations and those of our business partners.

Growth in Aluminum Demand

With an annual growth rate of 5.25 percent in 2017 and growth projected at 4.25 to 5.25 percent for 2018, global demand for aluminum continues to increase at one of the highest rates among base metals. Stricter emissions and fuel-efficiency regulations and consumer demand for more sustainable products have positioned aluminum as a metal of choice to reduce weight and increase recyclability without compromising performance.

We are well-positioned to capitalize on this growth. We are a recognized sustainability leader within our industry, and this reputation facilitates access to additional resources we require to grow. Our operations are also strategically located near the world's growth markets.

Product and Process Differentiation

We have opportunities to differentiate our products from the competition by leveraging key attributes that are important to our customers. For example, our new SUSTANA line of aluminum products (See the Products section) improves the carbon impact of our customers' supply chains, helping them achieve their sustainability goals.

On the production side, we have opportunities to reduce our environmental footprint through process improvements and advanced technologies. We also have taken a leadership position in transforming coproducts and byproducts from our operations into commercially viable products. (See the Waste section.)

Transfer of Knowledge and Best Practices

As a sustainability leader, we continuously seek opportunities to assess and influence the sustainability of our suppliers (see the Supply Chain section) and partners.

We review and monitor the compliance programs of significant joint ventures where we are not the controlling shareholder. Under this program, a steering committee composed of senior Alcoa executives provides oversight to local teams charged with reviewing and monitoring the ethics and compliance practices of the joint venture.

These reviews are conducted in collaboration with the joint venture partner and focus on key compliance program components, including:

- Commitment from senior management;
- Oversight, autonomy and resources for compliance;
- Code of conduct, anti-corruption and other compliance policies and procedures; and
- Ethics training, confidential reporting and investigations.

Our teams work with our partners to ensure alignment around the compliance programs for the joint venture and develop plans to close any identified gaps. As part of the process, we also share our best practices.

Key Challenges: While capturing the opportunities, we must address the challenges.

Aluminum Pricing

A persistent challenge is fluctuation in the price of aluminum due to factors beyond our control. Pricing can be impacted by macroeconomic developments that suppress demand, such as an economic slowdown that would negatively impact the construction or automotive industry.

Pricing also can be influenced by excess supply on the global market. For example, China increased its exports in recent years as production capacity exceeded domestic demand.

Based on data provided by CRU, we estimate that China produces 57 percent of the world's primary aluminum, with 87 percent of this production powered by electricity produced at coal-fired plants. We also estimate the country emits more than 73 percent of the world's greenhouse gas emissions for aluminum production.

Exposure to Carbon Markets

The industry's heavy carbon footprint and the signing of the 2016 Paris Agreement on climate change have increased interest in strengthening regulations for carbon emissions. Many countries have instituted or are considering emissions trading systems, carbon offsets, carbon taxes and other carbon-pricing initiatives to voluntarily mitigate climate change and build climate resilience. We have been participating in the carbon markets in Europe and Canada and will draw from this experience as other initiatives are introduced around the world.

Increased Regulatory and Social Scrutiny

In November 2015, a mining company's residue storage area in Brazil collapsed. The resulting disaster escalated regulatory scrutiny of the country's mining industry as a whole and raised concerns among various stakeholders.

Unauthorized bauxite mining in Malaysia by other operators is also increasing scrutiny of the industry. Small-scale firms using sub-standard mining practices in that country have damaged the land, waterways and air, as well as local food supplies.

Operational Challenges

Challenges we face within our own operations include:

- Eliminating employee and contractor fatalities and mitigating risks of injuries inherent in our operations;
- Reducing our greenhouse gas emissions;
- Minimizing our freshwater use and improving the quality of the wastewater we discharge;
- Reducing our reliance on non-renewable natural resources;
- Maximizing opportunities to reuse or recycle all production coproducts and byproducts and eliminating landfill disposal of our wastes;
- Mitigating impacts to land and biodiversity;
- Attracting, retaining and developing employees, especially in regions of the world where there is intense competition for talent;
- Integrating our sustainability platform into our supply chain; and
- Enhancing our partnership with the communities where we operate and our engagement with all stakeholders.

Details on how we are approaching these challenges can be found throughout this sustainability report.

Risk Management

Our risk-management process has been structured around the Integrated Framework for Enterprise Risk Management from the Committee of Sponsoring Organizations of the Treadway Commission and has used the International Organization for Standardization's ISO 31000 (risk management) as a guideline.

We use the process to identify and evaluate a broad spectrum of risks. It is structured using our key business drivers and organizational goals to ensure that all aspects of the company have been covered. Business drivers include our reputation, brand, earnings and operating margins. Organizational goals include excellence in stewardship of the environment, health and safety, a consistently fair representation of financial information, organic growth and more.

The identified risks are grouped into categories and presented to management to determine how they should be prioritized. Our process is multi-dimensional and focuses on several aspects, including likelihood of occurrence, level of impact and mitigating factors. Each is considered in assessing and prioritizing risk, with more emphasis placed on likelihood and impact.

The collaborative process by which risks are identified, evaluated and managed ensures that senior management remains aware and vigilant in managing key risks that could impact the company. The Alcoa Board of Directors maintains oversight of our risk management, and our management reports on specific risks on a periodic basis.

A discussion of our significant risks can be found in our Form 10-K for the year ended December 31, 2017. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may materially adversely affect us in future periods.

Any forecast set forth in this section speaks as of the date it was originally presented. Alcoa is not updating or affirming any of the forecasts as of today's date. The provision of this information shall not create any implication that the information has not changed since it was originally presented.

Sustainable Development Goals

We have made significant progress against our own goals as well as many of the United Nations' 17 Sustainable Development Goals. Here are some key actions and achievements in 2017.

- We paid US$1.7 billion in labor costs and had US$9.5 billion in procurement spend.
- We created and funded a program to develop an entrepreneurial poultry industry in Juruti, Brazil, that provided food and income for three initial producers.

- We continued our financial support of the community hospital that we built in Juruti, which opened in 2012.
- We implemented a voluntary pneumonia vaccination program for our employees who weld since they are at higher risk of contracting the disease.
- We launched our One Alcoa initiative to more deeply integrate temporary workers, contractors and visitors into our safety programs and data.

- Our partnership with training partner SENAI in Juruti provided residents in this remote Amazonian region access to nearly 90 professional and technical courses.
- In Australia, our four-year apprenticeship program continued to be a pathway to a trade certificate in a variety of vocations.
- The Alcoa Water-Waste-Watts program, which was funded by Alcoa Foundation, provided hands-on science, technology, engineering and math education to more than 14,500 students in five countries.

- We formed the internal Human Rights Working Group.
- Our chief executive officer signed the CEO Action for Diversity & Inclusion™ pledge.
- In Australia, our managing director became a Workplace Gender Equality Agency pay equity ambassador.
- We set a 2017 target to have women at all levels comprise 14.5 percent of our global workforce and linked its achievement to our total variable payment opportunity. We achieved 14.6 percent.
- Our Brazilian employees formed four chapters of our Employees at Alcoa for Gay, Lesbian, Bisexual and Transgender Equality employee network.
- We received a perfect score of 100 on the Human Rights Campaign Foundation's Corporate Equality Index 2018 and earned the 2017 Straight for Equality in the Workplace award from PFLAG.

- We launched an anode-cooling process that saves 151 cubic meters (40,000 gallons) of water per day at our Intalco Works in the United States.
- In partnership with The Nature Conservancy, Alcoa Foundation launched a project to preserve Peel Harvey Bay in Australia.

- Our energy consumption declined 5.7 percent.
- Approximately 75% of the electricity consumed by our smelters was from renewable sources.
- Our refineries set a system-wide energy-efficiency record.
- In October 2017, we signed two long-term renewable (wind) power purchase agreements related to our operations in Norway.

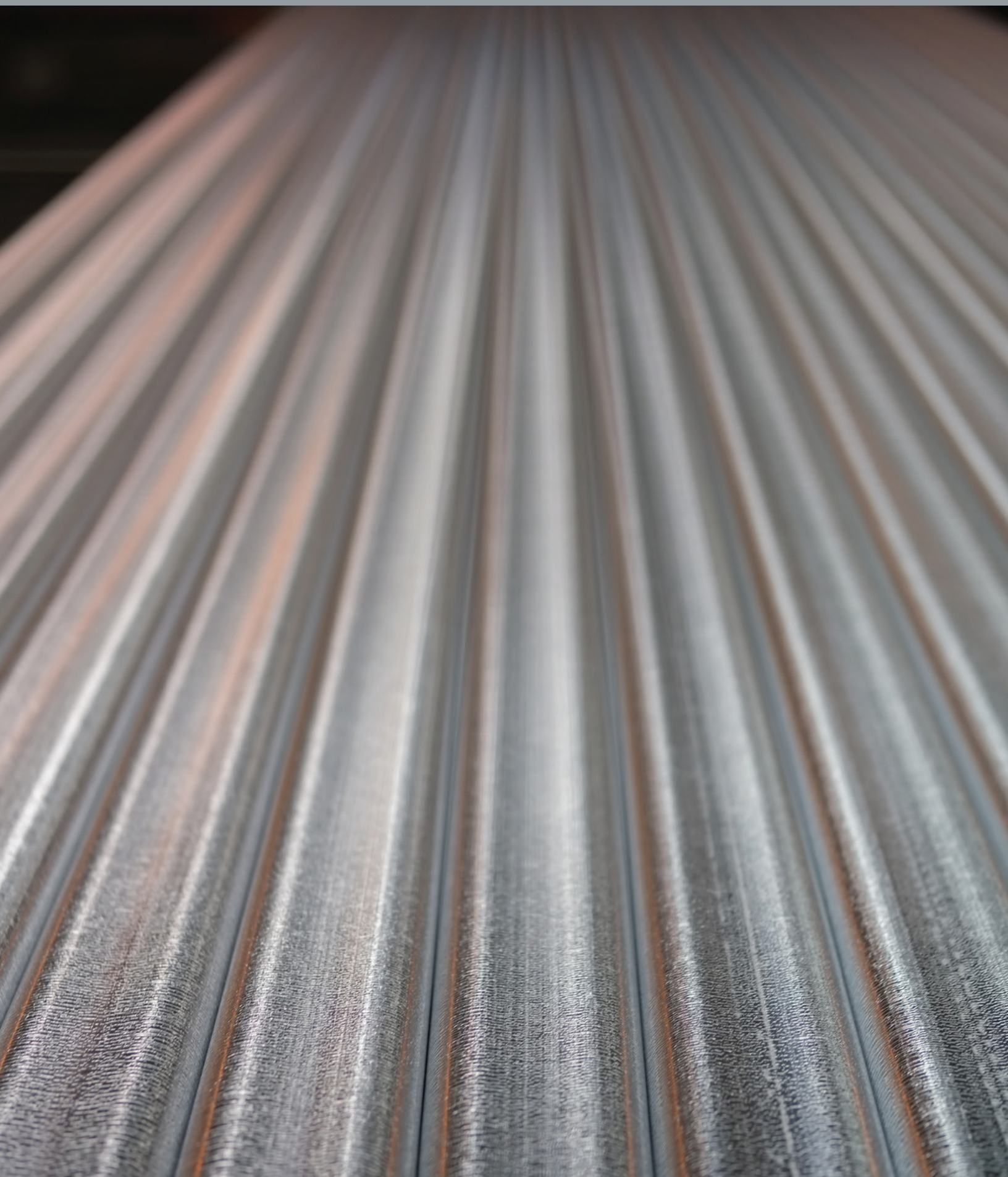
- Our Centers of Excellence—mining, refining, aluminum and rolling—advanced industry knowledge and ensured continuous improvement.
- We continued the rollout of our SUSTANA line of products, which are produced with low carbon emissions and recycled aluminum content.
- We developed an environmental product declaration covering the ECOLUM family of cast products.
- We found alternative uses for 108,000 metric tons of coproducts and byproducts.
- We achieved a 2 percent improvement in bauxite residue storage efficiency.
- In 2017, we used 382,000 metric tons of scrap in our global operations.
- Alcoa Foundation again provided financial support and served on the board of directors of The Recycling Partnership.

- Our carbon dioxide emissions declined 10.9 percent in 2017.
- To engage our salaried managers and leaders, we connected 5 percent of their annual variable compensation to achieving carbon dioxide reductions.
- Alcoa Foundation supported research from the World Resources Institute on how companies worldwide currently make and use estimates of avoided greenhouse gas emissions to develop and promote low-carbon products that would aid the transition to a more sustainable future.

- We enabled the Great Otway National Park in Anglesea, Australia, to be expanded by 6,510 hectares (16,087 acres) with our early surrender of leased land.
- We conducted field trials on cost-effective techniques to re-establish an important jarrah forest tree species as part of our rehabilitation process.
- We marked the 19th anniversary of the Swan Alcoa Landcare Program in Australia, which has funded some 1,300 community-driven land care projects since 1998.

- Through our Global Supplier Sustainability Program, we assessed and helped improve the sustainability of key suppliers.
- We also continued implementing a separate third-party supplier due-diligence program to further manage risk in our supply chain.
- Alcoa Foundation invested US$5.8 million in global and community programs.
- We took an active role in the development of the Aluminium Stewardship Initiative's sustainability standards, which were released in 2017.
- We were named to the Dow Jones Sustainability Index in 2017.

Enhancing Product Value



Products

Aluminum is the element of possibility.

It is lightweight, durable and infinitely recyclable. It is used to make airplanes, cars, trucks, buses, trains and buildings more energy-efficient, helping reduce greenhouse gas emissions over the life cycle. It enables lighter, fully recyclable packaging that preserves food longer, reducing waste.

In partnership with our customers, we continue to enhance the sustainability of our products. Our Centers of Excellence—mining, refining, aluminum and rolling—advance our knowledge and ensure continuous improvement through technology and engineering, best practice sharing and core operation standards.

Bauxite

We are one of the world's largest producers of bauxite ore. Because our high-quality and reliable bauxite is mined responsibly, it helps reduce supply chain risk for any downstream user.

The sustainability of our mining operations begins with engaging stakeholders to develop a rehabilitation plan before operations commence. We minimize operational impacts and use innovative techniques to prepare former mine lands for future beneficial use. See the Mine Rehabilitation section for more information.

Bauxite

Alumina

We are the world's leading producer of alumina, which is refined from bauxite ore. Our sustainability challenges in refining are water usage, particularly in our three Western Australia refineries, and bauxite residue management. Information on how we are addressing each can be found in the Water and Waste sections.

Alumina

Aluminum

Smelting

Smelting alumina to produce aluminum is an energy-intensive process that emits greenhouse gases. We have achieved significant success in reducing our energy usage and emissions and are an industry leader in developing technology and implementing process controls to further reduce impacts from smelting. See the Energy and Climate Protection sections for details.

Casting

Our global network of primary aluminum casthouses produces a complete portfolio of aluminum billet, foundry ingot, rolling slab, rod, powder, and high purity and P1020 ingot.

Our SUSTANA line of environmentally friendly aluminum products includes ECOLUM cast products, which are produced at Alcoa hydro-powered smelters that generate no more than 2.5 metric tons of carbon dioxide equivalents per metric ton of aluminum produced—75 percent better than the industry average. Each ECOLUM product is issued a certificate of origin that verifies its carbon emissions.

We also have developed an environmental product declaration (EPD) covering the ECOLUM family of cast products. The EPD, which is registered with UL, provides further information and validation of the products' total footprint. (View the EPD.)

Another offering in the SUSTANA line is ECODURA™ billet, which can be used in building and construction products. The billet has a minimum of 50 percent recycled content, not including internal scrap or primary remelt, and is produced with up to 95 percent less energy.

ECODURA billet

ECODURA and ECOLUM products can contribute to LEED® and BREEAM® certifications for sustainable building projects.

Our Alcoa Specialty Alloys offer higher strength and better thermal performance for new lightweighting solutions. This product family includes SupraCast™, EZCast™, VersaCast® and EverCast™ alloys.

Rolling

Our flat-rolled aluminum is used for food and beverage containers, lithographic printing plates and industrial product applications. We take an active role in helping increase the amount of used beverage containers available for recycling globally, and we use these products in the production of our aluminum. See the Recycling section for additional information.

Rolled products

Differentiation Strategy

Our intense focus on sustainable and responsible practices provides additional value for customers and differentiates Alcoa Corporation among operators.

We mine bauxite in areas of high biodiversity interest, such as the Brazilian Amazon and Australian jarrah forest. We do so by using advanced practices through all stages, from mine planning to closure, and our mine rehabilitation methods are considered best-in-class in the industry. Our alumina refineries lead in energy efficiency, and we continue developing better storage practices for bauxite residue while also pursuing alternative uses for the material. Approximately 75 percent of the electricity consumed by our smelters is from renewable sources, enabling us to offer a line of low-carbon products for customers who value sustainability.

In addition to helping address many of the challenges facing society today—climate change, mobility, housing and more—our products help reduce supply chain risks for our customers. This is possible because we operate our plants with strong controls and against the highest standards in the world.

Our commitment to make differentiation valuable for our customers extends beyond our operations through our participation in industry initiatives, most recently the European Aluminium's Sustainability Roadmap Towards 2025 and the Aluminium Stewardship Initiative's certification program.

Launched in 2015, the Sustainability Roadmap Towards 2025 sets voluntary targets for the European aluminum industry in the areas of responsible production, innovative applications and socio-economic contribution. We are a participant in this initiative, reporting on our performance against the targets on a periodic basis.

Our vice president of sustainability also chairs European Aluminium's Sustainability Committee, which holds responsibility for the roadmap. She also serves on the organization's recently formed External Advisory Board, which supports, stimulates and provides high-level guidance to the European aluminum industry.

We have been working with Aluminium Stewardship Initiative to develop the first multi-stakeholder third-party certification system for the aluminum supply chain. Our vice president of sustainability is a member of the organization's Standards Setting Committee, which is the multi-stakeholder body charged with defining the standards against which certification is granted. The certification program launched in December 2017, and we will analyze how it fits within our differentiation strategy during 2018.

Recycling

Aluminum can be recycled infinitely without losing its properties, making it the sustainable choice in many of the markets we serve.

According to the International Aluminium Institute's analysis, approximately 75 percent of all primary aluminum ever produced is still in productive use due to its strength, product life and recyclability. Recycling aluminum uses about 8 percent of the energy required to make new aluminum ingot and emits 92 percent fewer greenhouse gases.

We recycle aluminum in our casting and rolling operations, using both internal and purchased scrap. We also have closed-loop processes in place with customers, where aluminum scrap from their operations is returned to us for reuse (excluding internal scrap or primary remelt).

In our primary aluminum casthouses, we use purchased third-party and closed-loop scrap to produce our ECODURA billet. Part of our SUSTANA line of aluminum products, the billet has a minimum of 50 percent recycled content and is produced with up to 95 percent less energy.

In 2017, we used 382,000 metric tons of scrap in our global operations. This was lower than prior year due to the planned exit of specific North American markets by our rolling business.

A strategic initiative during 2017 was to increase the recycled content in the flat-rolled aluminum produced at our Warrick Operations in the United States. We achieved a 17.2 percent increase for the year compared to 4.1 percent for 2016. We anticipate achieving more than 30 percent recycled content at the location in 2018 with equipment upgrades and other initiatives.

Our recycling efforts extend beyond our own operations to include partnerships with established recycling initiatives. In the United States, Alcoa Foundation continues to provide financial support and have representation on the board of directors of The Recycling Partnership. As a member, Alcoa Corporation also contributes expertise to the organization, which uses public-private partnerships to improve recycling at the local level.

With Alcoa Foundation and Alcoa Corporation support, The Recycling Partnership has expanded its reach to 384 additional communities across the United States, bringing its cumulative total to more than 580 communities. Its work in 2017 eliminated an estimated 68,626 metric tons of carbon dioxide, saved 643,520 cubic meters (170 million gallons) of water and collected 22,495 metric tons of recyclables.

2017 at a Glance

382,000 metric tons of scrap recycled

Photo credit: The Recycling Partnership

The Recycling Partnership in Atlanta

Coproducts and Byproducts

In addition to recycling scrap, we actively seek to recycle or reuse our coproducts and byproducts. In 2018, we set a target to optimize our portfolio of economically viable placement opportunities for byproduct materials (from waste to value) by 2020 and define specific objectives to be achieved by 2025 and 2030.

See the Waste section for additional information on our coproducts and byproducts.

Creating Sustainable Value in Communities

Shared Value Creation

One of the three pillars of our sustainability strategy is to create value for the communities where we operate.

A key component of this pillar is stimulating economic activity at the local and regional levels to enable improved quality of life for our employees and neighbors. We do this by providing stable, fair-paying jobs, procuring goods and services from suppliers, paying income and other taxes, and investing in community infrastructure and initiatives.

Opening of a new elementary school in Guinea that was funded in part by Alcoa Foundation

Guiding our value creation efforts with local and regional stakeholders are our Values, Ethics and Compliance Program and Human Rights Policy. These are also the foundation of our efforts to provide a higher quality of life and well-being for our employees, professional development opportunities, and a work environment that is inclusive and shaped by industry-leading health and safety programs.

Our new long-term goal for sustainable value creation is to reassess the implementation of key stakeholder engagement tools by 2020 and define shared value creation opportunities to be implemented by 2025 and 2030.

Sharing the value created by our presence helps communities thrive and earns us access to the resources we require to manufacture our products.

2017 at a Glance

US$9.5 billion spent with suppliers

US$5.8 million in community investments

2017 Alcoa Economic Value

	Australia	Europe	North America	South America	**Total**
Labor Costs *(US$ billions)*	0.5	0.3	0.8	0.1	**1.7**
Procurement Spend *(US$ billions)*	1.8	2.0	4.3	1.4	**9.5**
Income Taxes *(US$ millions)*	221.4	47.4	74.5	20.1	**363.4**
Employee Volunteer Hours	1,792	1,440	2,336	4,216	**9,784**

Labor costs include compensation and benefits for employee services rendered plus employee expenses for external training, transfer and relocation, expatriate costs, workers' compensation, travel, recognition and rewards, medical expenses, meals, recruitment, transportation, education, work clothes and other employee-related expenses. Income tax amounts are net of income tax refunds received and exclude various other taxes, such as sales taxes, excise duties, levies and local taxes not based on income.

2017 Alcoa Foundation Economic Value

Millions of U.S. dollars

Australia	1.0
Europe	1.1
North America	1.7
South America	0.3
Global Outreach	1.7
Total	**5.8**

Europe includes Africa.

Complete details on our 2017 financial performance can be found in the Alcoa Annual Report.

Case Study

Free-range Chicken Project Lays Foundation for New Industry

Which came first—the chicken or the entrepreneurial spirit?

In the Juruti Grande Lake region in Brazil, we are helping build the local poultry industry one entrepreneur at a time.

Engagement with the community identified several economic development opportunities, with the community settling on free-range chicken production. In late 2016, novice producers selected by the local community association received financial and volunteer assistance to build an aviary for free-range chickens on each of their properties. One aviary is for breeding and producing eggs, while the other two are for raising chickens.

To help empower the community, Alcoa provided materials to build the aviaries as well as funding for ongoing training by poultry experts, agricultural technicians and others. The producers also received 91 kilograms (200 pounds) of seed to plant 6.5 hectares (16 acres) of corn to reduce feed costs.

In 2017, the sale of eggs and chickens produced a combined income for the producers that was almost four times the average annual per capita income in the area. The community also benefitted from higher-quality poultry products compared to those previously imported into the region.

“This project gave me a weekly income through the sale of eggs and also provided eggs and chicken for my family

João Batista da Silva and his free-range chickens

to consume,” said João Batista da Silva, father of five and owner of the breeding and egg-producing aviary. “This was an unprecedented project to help people in our community.”

He adds, “I’m already working to build additional aviary space to raise chickens for sale, which will be another form of income. I’m prepared to pursue this business on my own once the support I’m receiving ends. At first I didn’t believe I could, but now I see that this business has a future.”

The project, which is continuing in 2018, is spurring others in the community to start their own aviaries and agriculture-based activities. The poultry producers are capitalizing on yet another income stream as a result—the sale of fertilizer to these new farmers.

Case Study

Building and Hiring a Skilled Local Workforce in the Brazilian Amazon

At our Juruti mine deep in the Brazilian Amazon, a partnership with a benchmark training organization and the local government has produced a skilled local workforce for not only our operations but other businesses in the state of Pará and beyond.

When we first entered the Juruti region in 2006, the illiteracy rate was 21 percent, the local economy was based primarily on fishing, hunting and subsistence agriculture, and the educational structure was poor. The skills necessary to build and operate our mine were practically non-existent among the area's 35,000 citizens and local companies.

In 2006, SENAI brought its floating classroom to the area to conduct mining-focused training. The partnership has since expanded to encompass nearly 90 professional and technical courses at a permanent training center in Juruti. While many of the courses still pertain to mining and manufacturing, others build vocational skills that range from automobile repair to fashion design.

More than 7,000 people—34 percent of them women—have graduated from the training program, with 57 percent of the local graduates hired by Alcoa or our suppliers. In 2017, 34 percent of our Juruti mine's employees were from the local area and 45 percent from the state of Pará.

Howdy Barreto

Howdy Barreto, who was born in Juruti, participated in SENAI's two-year electromechanical operator program. He joined Alcoa as a maintenance assistant upon graduation in 2014 and currently serves as a railway operator. In 2017, he was selected to participate in a mine engineering course at the Federal University of Western Pará.

"The SENAI program has allowed me to gain knowledge and confidence, and it has opened many doors for me," said Mr. Barreto. "It also broadened my vision to a different and promising future with Alcoa. I will always be searching for professional and personal challenges within the company."

Taxes

In addition to the economic activity we stimulate at the local and region levels, we also contribute to the communities where we operate through a variety of tax payments.

Our corporate tax policies and strategy closely follow our financial and ethical policies and guidelines. In addition, our finance and code of conduct policies provide robust guidelines for our tax professionals to follow.

We observe all applicable tax rules and regulations in the jurisdictions where we have a tax presence. Where possible, we work closely with local governments to ensure transparency, and we participate in current audit initiatives to shorten audit cycles and reduce tax risk. We have a number of tax procedures in place to ensure that our top management is aware of and understands the tax consequences of all material company transactions, audit settlements and other material tax matters globally.

Our tax professionals partner our business and resource units to provide proactive, efficient tax services to:

- Satisfy all income tax reporting and filing obligations in accordance with laws and regulations at a competitive cost;
- Develop and implement tax strategies to support business unit goals and maximize shareholder value;
- Proactively reduce Alcoa's tax liabilities to the minimum level permitted by law and regulation;
- Mitigate tax risk through thoughtful implementation and documentation, proactive involvement in legislation, and engagement in transparent, current audit programs with local governments; and
- Assist in developing sustainable, arms-length pricing on intercompany transactions.

Stakeholder and Community Engagement

We believe it is important to have transparent and regular dialogue with identified stakeholders to ensure a mutual understanding of issues, concerns and opportunities.

We define a stakeholder as any person or organization that impacts, or is impacted by, our activities. This includes stockholders, employees, customers, suppliers, government representatives and regulators, non-governmental organizations, local communities and media.

Our stakeholder relationships are both formal and informal. With customers, suppliers, governments, employees and stockholders, we typically have formalized, contractual or even legally mandated channels for engagement. Our engagement with other stakeholders is typically much less formalized and requires attention to ensure that it is maintained on a regular basis.

At the location level, our operations follow a framework to guide stakeholder engagement. The framework provides a systematic process to first identify appropriate stakeholders and then engage with them in the most effective manner, ensuring transparent and ongoing dialogue. As part of this framework, many of our locations have community advisory boards that include representatives from our stakeholder groups. These advisory boards meet with our location leaders on a periodic basis.

We also engage with stakeholders, primarily local communities and non-governmental organizations, through Alcoa Foundation. The method of engagement varies by location. Some do so through their community advisory board, while others consult with employees or local leaders and institutions.

Our locations in Spain, for example, engage employees to determine opportunities in the community. An employee survey solicits input on their areas of interest, suggested activities and nonprofits they support. The locations also engage local and regional institutions for input on community needs.

Approximately 50 percent of Alcoa Foundation's annual budget is used for local initiatives in the areas of education, environment, governance and community enhancement. The remaining 50 percent is dedicated to global signature partnerships and programs focused on climate change and biodiversity.

Brendan Foran
CEO
Greening Australia

"Alcoa has supported Greening Australia in partnership since 1982, enabling Greening Australia to undertake significant projects to educate and engage Australians in environmental initiatives. Some of these initiatives include: restoring large-scale native grassland and degraded land; creating wildlife corridors; establishing native seed banks; developing direct seeding technology; and launching the first accredited carbon offset program for the general public. Our newest project with Alcoa Foundation, the Three Rivers initiative, again demonstrates Alcoa's commitment to biodiversity and landscape restoration in Australia. The partnership will deliver the Three Rivers Initiative over the next three years in the Peel-Harvey area adjacent to the Alcoa Wagerup and Pinjarra operations in Western Australia. The focus is on improving the condition of the three major rivers in the Peel-Harvey area—Murray, Serpentine and Harvey—to reverse the loss of habitat for threatened species and integrate large-scale restoration and carbon sinks into Peel-Harvey's fragmented landscape."

The following key issues were raised by, or discussed with, stakeholders in 2017.

2017 Stakeholder Issues

Location	Issue	Action
Alcoa of Australia Head Office, Perth, Australia	Media reports inaccurately said that Alcoa was one of several companies operating in Australia that did not pay company income tax for the 2015-2016 financial year (or 2015 calendar year).	Alcoa's operations in Australia consist of two national income tax filers: Alcoa of Australia Ltd. (AofA) and its 60% owner, Alcoa Australia Holdings Pty Limited (AAH). We responded to media inquiries and communicated with employees, clarifying that AofA's operations paid corporate income taxes for the 2015 calendar year at an effective tax rate of 29.5 percent (Australia's statutory rate is 30 percent). We also communicated that AAH's income in the 2015 calendar year consisted primarily of dividends from AofA—this income is effectively exempt from tax under Australian tax regulations. Accordingly, AAH paid no income tax for the 2015 calendar year.
Anglesea, Australia	We were required to develop a revised closure plan for the Anglesea coal mine and a draft master plan for Alcoa's freehold land.	We continued engaging with the local community and key stakeholders to gather input to help inform both plans. Actions included bimonthly community meetings, workshops, community events, newspaper advertorials, briefings, online engagement and public submissions. Community feedback and technical studies were key inputs into the draft Anglesea Mine Rehabilitation and Closure Plan. This was subject to community consultation during June 2017 and subsequently finalized and submitted to the Victorian government's Earth Resources Regulation in September 2017. Development of the draft concept master plan for Alcoa's freehold land commenced and was released for community feedback in early 2018. The final concept master plan was provided to the Department of Environment, Land, Water and Planning in March 2018. Between March 2016 and the end of 2017, our consultation regarding the Anglesea site has generated more than 6,000 community contacts across 14 public events and online engagement.

2016 Stakeholder Issues

Location	Issue	Action
Kwinana, Australia	Since the Western Australian Planning Commission (WAPC) adopted the Kwinana air-quality buffer in September 2010, there has been ongoing litigation and questions relative to the legitimacy of the buffer and land uses in the area. In 2016, the then Minister for Environment requested the Environmental Protection Authority (EPA) of Western Australia provide advice on the size of the proposed industrial buffer in relation to potential health and amenity impacts associated with current and future land uses in Mandogalup, which is adjacent to our Kwinana refinery. In August 2017, the Western Australian government received advice from the EPA that indicated there was negligible health risk and low likelihood of unreasonable amenity impacts in the eastern area of Mandogalup. The advice also recommended further air quality monitoring was required in other areas of Mandogalup to better understand the sources of any potential impacts.	Alcoa supports compatible development in the Mandogalup area. However, we maintain that there needs to be adequate separation between industry and residential development. As such, the 1.5-kilometer (0.9-mile) buffer adopted by the WAPC is appropriate and should be upheld. In 2017, we provided information to inform the EPA's advice to the minister. We held discussions with various government and regulatory stakeholders to communicate our view. We also actively engaged with the Department of Environment and Water Resources to support additional monitoring requirements identified by the EPA report.
Point Henry, Australia	We continued engagement related to the decommissioning and environmental assessment of the site of our Point Henry smelter, which ceased operations in 2014.	Following an extensive community consultation process involving workshops, quarterly community meetings, briefings, community events, newspaper advertorials, online engagement and public submissions, we released the Point Henry 575 Concept Master Plan in September 2017 to detail the future of the approximately 575-hectare (1,420-acre) site. Between December 2015 and the end of 2017, the three-phased community consultation program generated more than 2,400 community contacts across 16 public events and online engagement.

2017 Stakeholder Issues

Location	Issue	Action
Portland, Australia	The expiration of a 32-year electricity supply agreement with the Victorian government in October 2016 exposed the Portland Aluminium smelter to higher transmission costs and power prices not linked to the global aluminum price. With persistently low aluminum prices, this added significant pressure to the viability of the smelter. In December 2016, a fault on the Victorian transmission network caused a significant power outage at the smelter, leading to the loss of one potline and leaving only a portion of the second potline operating in the final weeks of 2016. Negotiations to resolve both issues carried into 2017.	We announced in January 2017 that we had reached four-year agreements with the Victorian state and Australian federal governments to restart the capacity lost as a result of the power outage. We also signed a four-year financial contract with energy supplier AGL to swap the variable price Portland pays for electricity in the spot market with a fixed price to mitigate future price volatility. During agreement negotiations, we engaged with our Portland Aluminium joint venture partners, the Australian state and federal governments, unions, community leaders, contractors and employees. We also responded to media inquiries related to the future of the plant. We continued to keep all parties informed throughout 2017 as extensive work was undertaken to restore lost operating capacity. We held recognition events for employees, contractors, suppliers and government representatives to celebrate the hard work undertaken to restore lost capacity.
Western Australian Mining Operations	In December 2016, the Western Australian state government approved the export of up to 2.5 million metric tons per annum (mmtpa) of bauxite for five years from Kwinana Bulk Terminal (KBT). As KBT was unlikely to ship the full 2.5 mmtpa, we sought approval to also export through the Port of Bunbury for an initial two-year period. Our request was approved in September 2017.	As part of the process to obtain approval, we engaged with the operators of the Port of Bunbury, Southern Ports Authority, multiple state government departments, local governments in the Peel and South West regions, Alcoa community consultative networks, Bunbury Port Community Liaison Committee, employees, contractors and suppliers. The first shipment of bauxite departed from Bunbury for China in November 2017.
Western Australian Mining Operations	As part of ongoing work to establish the potential viability of mining around Dwellingup, we announced in November 2016 that we would undertake a further assessment of an area known as Teesdale West (located to the west and northwest of Dwellingup) via a desktop feasibility study. We committed to share the results of the study with the community in 2017.	We wrote to Dwellingup landowners and tenants in September 2017 to provide the results of the initial feasibility study, which indicated the bauxite present in the Teesdale West area has potential value. We also notified them of our intent to further investigate the mining viability of the area via a phase-two feasibility study. We sent letters to, and held briefings with, local and state government representatives. We continue to communicate one-on-one with interested neighbors.
Juruti, Brazil	The Juruti City Council requested information on the Positive Agenda, which is our voluntary commitment to invest in the community, as well as licensing, mining compensation tax and collective compensation matrix for the Socó I settlement.	We clarified each item and extended an invitation for council members to visit our Juruti mining operations.

2017 Stakeholder Issues

Location	Issue	Action
Juruti, Brazil	Residents of the Lago Preto community formally requested clarification on the private contract for land concessions and land use in the area of our railroad. They also requested topography services for demarcation of the properties included in the contract.	We provided all documentation in February 2017 and again at a community meeting in June. We initiated the topography services requested by the community, but these were interrupted by internal community issues. We plan to restart the services in 2018.
Poços de Caldas, Brazil	Through a reputation survey commissioned by our Poços de Caldas location and conducted by an external research firm, we learned that the local community required increased information on Alcoa, our mining process, our environmental performance and our plans to continue operations in the city.	In July 2017, we resumed monthly community visits to our operations through our Alcoa Open House Program. We also reactivated the location's community advisory board to assist in community investment discussions.
São Luis, Brazil	Residents of the Aguada community, which is located 3 kilometers (1.9 miles) from our Alumar refinery, expressed concern about dust they believed was coming from our operations.	We immediately met with the community to discuss the problem. In parallel, we intensified dust control measures at our bauxite residue storage areas.
Bécancour, Canada	The collective bargaining agreement for Aluminerie de Bécancour (ABI) expired in November 2017.	After the union rejected management's proposal for a new collective bargaining agreement, Alcoa and Rio Tinto locked out unionized employees on Jan. 11, 2018. The plant then reduced operations to one of three potlines, operated by management personnel. On May 4, 2018, the management of ABI communicated to the Ministry of Labor that it was ready to begin new negotiations. Management kept key community stakeholders abreast of the issue and addressed concerns.
Fjardaál, Iceland	Icelandic media and politicians, as well as a French European Union parliament member, expressed concern that Alcoa Iceland has not paid any income taxes.	We engaged with stakeholders through publications, news articles and meetings to convey that Alcoa Iceland is in compliance with its parliamentary- approved investment agreement. Under that agreement, payment of income taxes is related to the profitability of the operations and the satisfaction of certain conditions.
Portovesme, Italy	Redevelopment activities for our curtailed Portovesme smelter raised concern among community stakeholders. They requested the government try one more time to find a potential investor through Invitalia, an Italian government agency responsible for managing economic development.	We have worked for years with all parties to sell or repurpose the smelter. The signing of the agreement with Invitalia on December 22, 2017, to transfer the facility to Invitalia under certain conditions is an important step in this process. We look forward to continued cooperation with the Italian government and Invitalia to implement all scheduled actions and obligations.

2017 Stakeholder Issues

Location	Issue	Action
Mosjøen, Norway	We continued concurrent remediation of the Alcoa Mosjøen harbor, which contains sediments with polycyclic aromatic hydrocarbon (PAH) contamination, and the extension of a wharf shared with the municipality.	We have interacted extensively with various national, regional and local stakeholder groups and have combined forces to plan and execute the remediation in the most effective way. We used the opportunity to improve the harbor and extend the wharf shared with the municipality, making it possible to accommodate larger vessels. The project is expected to be completed and approved in 2018.
Avilés, La Coruña and San Ciprián, Spain	We continued seeking a long-term competitive energy framework necessary for the economic viability of our Spanish smelting operations.	We participated in the annual energy auction of interruptibility services held in late 2017. The auction's delivery period was the first five months of 2018, during which our Spanish smelters will have a lower annual run-rate value for interruptibility services than 2017. An additional auction of interruptibility services for June 2018 onward is expected during the second quarter of 2018. We continue working with the Spanish government to achieve a power solution that provides a long-term competitive energy framework.
Point Comfort, Texas, USA	Local government officials and neighbors expressed concern about dust coming from bauxite residue storage areas that were impacted by the refinery's curtailment.	We met frequently with the Point Comfort Citizen's Panel and worked cooperatively with the Texas Commission on Environmental Quality. We engaged our experts from around the world and undertook several actions to minimize dusting. These included breaking up the surface of the storage areas; applying hay and matting; monitoring weather patterns to optimize the application of water via sprinklers; and evaluating surface conditions regularly to maintain optimal conditions. We kept stakeholders abreast of our activities through regular meetings and a website that we created to log community concerns.

Non-governmental Organization Engagement

Non-governmental organizations provide significant value to society. We partner with these institutions to support and advance their work in the areas of climate change and biodiversity in the communities in which we operate.

The following are some examples of recent partnerships.

American Forests

In 2017, Alcoa Foundation and American Forests announced a three-year partnership to enhance biodiversity and combat climate change in key areas across the globe. During the initial year, American Forests engaged 2,500 volunteers and restored 57 hectares (140 acres) in 11 locations, including cold-water streams in the Pacific Northwest, Brazil's Amazon forest and riparian forests in northern Spain.

Foundation for the Technological Development of Engineering

Through funding from Alcoa Foundation, the Foundation for the Technological Development of Engineering (Fundação para o Desenvolvimento Tecnológico da Engenharia) in Brazil is supporting research at three universities that is focused on using bauxite residue in the manufacture of cement. This helps reduce that industry's greenhouse gas emissions and use of non-renewable raw materials.

NatureBridge

NatureBridge and Alcoa Foundation partnered to offer the 2017 Alcoa Scholars program. This two-week program brought together 55 high school students from communities where Alcoa operates around the world to engage in hands-on science experiments and research, outdoor experiential learning and social emotional learning activities. The program focused on the foundation's key areas of engagement—reducing climate change and enhancing biodiversity. Many of the participants submitted post-trip projects.

NatureBridge participants

The Nature Conservancy

With Alcoa Foundation support, The Nature Conservancy is working in Australia, Brazil and Canada to strengthen the role of indigenous and local communities in managing lands to help mitigate global climate change. The projects have the potential to reduce greenhouse gas emissions by approximately 13.5 million metric tons.

Memberships

The following are some of the organizations in which we are a member or participant:

- Aluminium Association of Canada
- Aluminium Stewardship Initiative
- Australian Aluminium Council
- Brazilian Aluminum Association
- European Aluminium
- International Aluminium Institute
- The Aluminum Association

Through these organizations, we engage with numerous stakeholders on issues important to the aluminum industry.

Case Study

Social Dialogues Lead to Mutual Understanding

Two community engagement initiatives at our bauxite mine in Brazil help ensure that we consistently communicate with our stakeholders throughout rural and urban Juruti.

Through social dialogues, Alcoa representatives provide updates on our global, regional and local operations, as well as environmental and social performance in Juruti specifically. These community meetings include a lengthy question-and-answer session that provides an open forum for community members, government officials and institutions to gather additional information, express concerns or provide input.

Since 2015, the mine has conducted 62 social dialogues reaching 1,339 community members. These included 28 meetings in 2017.

"The importance of these social dialogues is that they bring different social agents closer in order to share and align information and promote actions for the common good," said Michelly Rios Arévalo, professor at the Federal University of Western Para, Juruti Campus. "This is a basic tool for solving problems that are often commonplace and simple to solve when working together."

The mine also organizes community visits to provide a first-hand look at its mining, transportation and shipping operations. These visits have reached more than 2,800 community members, government officials and representatives of local and regional institutions since the mine opened.

Social dialogue in 2017

Water, Waste and Watts

Why just teach science, technology, engineering and math (STEM) if students also can create innovative solutions using those skills to address environmental issues outside the classroom?

That's the philosophy behind National Wildlife Federation's Alcoa Water-Waste-Watts (W3) program. Funded by Alcoa Foundation, the program uses the Eco-Schools framework created by the Foundation for Environmental Education (FEE) and is administered globally through FEE member organizations.

Under the program, teachers at participating schools attend six hours of training on the framework, green STEM principles, and project-based learning focused on the sustainability pathways of water, waste and watts (energy). They then implement the framework at their respective schools, using a US$500 grant to support a hands-on student project based on one of the three pathways. In many locations, Alcoa employees volunteer to join in.

The program's one-year pilot, which ended in late 2017, involved 39 schools in Australia, Brazil, Italy, Norway and the United States. Projects included composting cafeteria waste, conducting energy and water audits at school and home, and recycling paper and other waste.

More than 14,500 students from all grade levels and nearly 1,270 teachers achieved the following approximate reductions in the pilot year:

- 15,000 pounds (6,800 kilograms) of waste;
- 21,100 gallons (80,000 liters) of water; and
- 3,876 kilowatt hours of electricity.

"Our proudest achievement is that what started out as a class project quickly turned into a school-wide changing event," said Rachael Barker, lead Eco-Schools teacher at Rockdale Intermediate School in Rockdale, Texas, USA. "We started by studying water conservation, participating in water filtration experiments and conducting a school-wide water audit. The latter helped lead to almost 11,700 gallons (44,300 liters) of water saved as students identified minor leaks in sinks and elsewhere."

Photo credit: Elizabeth Soper

Garden bed with composted cafeteria waste

Said Darcie Fregoe, sixth-grade grade teacher at Madison Elementary School in Massena, New York, USA, "One day, we audited all the food thrown out from lunch. This led to a lot of science-based research on composting and gardening, because we knew we had to do something with the great compost we were creating. This program allowed our students to live the science they were learning and bring it to life at our school."

The program will continue in 2018 at 27 schools in Australia, Norway and the United States with two additional pathways—warming (climate change) and wildlife.

Human Rights

Wherever we operate in the world—from Brazil to Iceland to Australia—we are committed to human rights.

We believe that commitment extends beyond simply having a policy on human rights. We strive to ensure this commitment is exemplified by our actions and those of each employee, supplier and business partner. Upon notification of any potential violations to our policy, we act quickly and decisively.

In addition to our Human Rights Policy (see box), other programs, policies and processes that encourage and monitor human rights advocacy include:

- The Alcoa Code of Conduct and employee training, both of which cover human rights;
- Supplier Standards that explicitly indicate respect of human rights;
- Internal and third-party supplier assessment programs for new and existing suppliers (See the Supply Chain section);
- An Integrity Line for employees, suppliers and the general public to report ethical and human rights violations; and
- Participation in the United Nations Global Compact.

In our ongoing commitment to human rights issues, we formed a Human Rights Working Group in 2017 comprising representatives from our ethics and compliance, security, procurement, human resources, sustainability, internal audit, government affairs and legal resource units. The group's mission is to maintain oversight of our human rights practices, ensure compliance with applicable United Nations Guiding Principles for Business and Human Rights, respond to external expectations and enhance programming.

The group's first initiative was to launch a top-level self-assessment of our human rights practices to identify gaps and recommend actions to close them. Simultaneously, the group reviewed our Human Rights Policy, which will be updated in 2018.

Building on learnings from the initial assessment, the group will cascade the self-assessment process to the country level in 2018, with a specific focus on varying country requirements.

As part of our strategic long-term sustainability goals, we are committing to reassess the implementation of key stakeholder engagement programs by 2020. Human rights due diligence will be one of the processes that we will reassess to determine the right frequency and content of the exercise for our operations.

Catherine Garfinkel
Vice President
Chief Ethics and
Compliance Officer
Alcoa Corporation

"Our commitment to human rights is a foundation stone—a basic essential element—of our ethical culture. When we operate ethically, our communities, employees and shareholders all benefit. In 2017, we began a journey to educate ourselves in human rights best practices and identify areas where we excel and areas where we can improve as a company. As a member of the team spearheading this initiative, I am impressed by the passion and work ethic of the group. It is another reason why I am proud to be part of Alcoa."

Human Rights Policy

Alcoa is a global enterprise that does business in many distinct local markets. In order to do so successfully, we rely on all Alcoans living Alcoa's Values.

Values provide the common framework for our decisions, actions and behaviors. They are our universal language—transcending culture and geography. Living our Values requires us to meet the highest standards of corporate behavior in all aspects of business in all regions of the world.

The foundation of our Values is integrity and caring for people, which are fundamental to our enterprise.

Alcoa's approach to issues involving human rights is guided by our Values.

Children and Young Workers

As a fundamental principle, we do not employ children or support the use of child labor. We do encourage the creation of educational, training or apprenticeship programs tied to formal education for young people.

Freedom of Engagement

We believe that people should work because they want or need to, not because they are forced to do so. We prohibit the use of prison labor, forcibly indentured labor, bonded labor, slavery or servitude.

Equality of Opportunity

We recognize, respect and embrace the cultural differences found in the worldwide marketplace. Our workplace is a meritocracy, where our goal is to attract, develop, promote and retain the best people from all cultures and segments of the population, based on ability. We have zero tolerance for discrimination or harassment of any kind.

Compensation

We ensure that compensation meets or exceeds the legal minimums and is competitive with industry standards. Our compensation philosophy is clearly communicated to employees and is in full compliance with all applicable laws.

Freedom of Association

We recognize and respect the freedom of individual Alcoans to join, or refrain from joining, legally authorized associations or organizations.

Relationships with Indigenous People

Within the framework of our Values, we respect the cultures, customs and values of the people in communities where we operate and take into account their needs, concerns and aspirations.

Our People

We are on a mission to build a stronger everyone culture—where our Values drive everyday decisions, and each employee's development matters.

Diversity, Inclusion and Engagement

We are committed to maintaining a trusting workplace that is safe, respectful and inclusive of all individuals. Our long-term sustainability goal is to attain an inclusive everyone culture that reflects the diversity of the communities in which we operate. This is an aspirational goal that will be supported with targets that are linked to our annual incentive compensation program and localized by having each location conduct a gap analysis.

Whether on the shop floor or in our offices, the intent of equality, diversity and inclusion is to ensure that everyone has access to the same opportunities and fair treatment while feeling valued and belonging. This is the foundation for an everyone culture, where employees feel confident and inspired to speak up and do their best work.

We define diversity and inclusion as:

- **Diversity:** All the ways we differ.
- **Inclusion:** How we respect and leverage these differences to achieve business goals.
- **Cognitive diversity:** Thinking differently, which impacts creativity and problem solving the most and is shaped by our unique backgrounds, experiences and perspectives.

In 2017, our president and chief executive officer signed the CEO Action for Diversity & Inclusion pledge, which outlines a specific set of actions the undersigned companies will take to cultivate a trusting environment. In Australia, our managing director became a Workplace Gender Equality Agency pay equity ambassador, committing to promote pay equity and gender equality.

Our efforts are being influenced by the results of a diversity and inclusion survey we conducted in July 2017. We provided results on a global, business unit and corporate resource unit level. The major findings were:

- Top strengths:
  - ✦ I am treated with respect and dignity.
  - ✦ My work group encourages a culture of involvement, respect and connection.
- Areas needing greatest improvement:
  - ✦ I have the opportunity to grow and develop.
  - ✦ I have access to the same opportunities and fair treatment as others.
- Key themes from more than 6,000 employee comments indicated the highest priorities are a desire for flexible work arrangements and work/life balance.

We hold leaders accountable for diversity and inclusion, and we link their performance to our annual incentive compensation. In 2017, we focused our diversity target on increasing the number of women in our global workforce. To increase visibility and accountability on our progress on diversity and inclusion, each business unit president now reports twice a year to our Executive Team on diversity metrics and initiatives.

2017 at a Glance

14,600 employees globally

100 (perfect) score on the 2018 Corporate Equality Index

Benchmarking that we conducted in 2017 against our peers in the metals and mining industry revealed that we were below the 16.7 percent average for women at all levels of employment across an organization. However, our intentional efforts to bring diversity into our new company's leadership resulted in being above the 29.1 percent average for board members and the 29.2 percent average for the executive team. We were at 33.3 percent for each at the end of 2017.

Our 2017 diversity target, which represented 10 percent of our annual incentive compensation formula for our leaders, was to have women at all levels comprise 14.5 percent of our global workforce. We achieved 14.6 percent.

2017 Global Women

Level	Percent
All	14.6
Board	33.3
Executive	26.6
Professional	27.5
Operational/Administrative	9.3

Our global women calculation is based on all categories of employees, including full and part-time permanent, full and part-time limited term and casual employees. Executive refers to a different level than the executive team.

2017 Employees by Employment Contract and Type

	Contract		Type	
	Permanent	*Temporary*	*Full-time*	*Part-time*
Male	12,200	400	12,150	500
Female	1,850	150	1,700	250
Total	**14,050**	**550**	**13,850**	**750**

All of the organization's work is performed by people who are employees of the company or are contractors supervised by employees of the company. We do not engage any other classes of workers, including those who are legally recognized as self-employed, to perform the company's work. Temporary employees are those with a contract of limited duration that often terminates along with a specific event (e.g., end of a project, a permanent employee returning from leave, or the completion of a stated period of time).

Increasing the number of women in operational roles is our biggest challenge due to the nature of the work, which is often physical and shift-based. Our smelter in Iceland, for example, had difficulty achieving its ambitious goal of gender equality in its workforce. When it switched from a 12-hour shift to an eight-hour shift, the smelter increased the number of women in its workforce from 20 percent in 2014 to 24 percent in 2017. The turnover rate for women also declined 25 percent during the same period.

Our employee resource groups (ERGs) were in transition during 2017. Our survey revealed that some employees prefer active participation through membership in our ERGs. Others prefer being involved in project-based initiatives that support diversity and inclusion with a focus on cultural awareness, retention of women and community partnerships that enable greater connections with colleagues.

In Australia, for example, the Alcoa Women's Network recognized the need to establish measurable actions to further support gender diversity and the growth of women in leadership. The result was the employee-driven Catalyst for Change initiative, where individuals across all facets and levels of the organization pledge to take action and demonstrate behaviors to help improve Alcoa's retention of women by strengthening their connections across the company. These employees promote the development of women, build networks, advocate for change and showcase the successes of women.

Jean-Marie Navetta
Director of Learning and Inclusion
PFLAG National

"Efforts to build inclusion for people who are LGBTQ need to be diverse and reach all levels and places where people work, and Alcoa gets that. Historically, Alcoa is an organization that has been diligent in ensuring that its policies and practices ensure that all employees are treated equitably and fairly. But Alcoa didn't just stop there. Through groups like EAGLE, they work to transform workplace climate so that not only are policies in place, but inclusion becomes a lived experience for employees, no matter where they do their work. So from the corporate offices to the plant floors, Alcoa employees who are LGBTQ can feel supported and included, while their allies have access to the resources to learn how they can act inclusively and respectfully. It is understanding that inclusion is an ongoing and evolving effort that requires organization-wide engagement that brought PFLAG to recognize Alcoa's outstanding work."

Translation: Every form of love is worth it.

Employees were the catalyst for change in Brazil, launching the first Employees at Alcoa for Gay, Lesbian, Bisexual and Transgender Equality (EAGLE) chapter in the country in June 2017 at our São Paulo location. Within two months, all four of our Brazil locations had EAGLE chapters. Strong leadership support, regular communications and high participation in Diversity Week events has helped create an inclusive culture for our lesbian, gay, bisexual, transgender and queer (LGBTQ) employees at those locations.

We received a perfect score of 100 on the Human Rights Campaign Foundation's Corporate Equality Index 2018, earning the designation as a Best Place to Work for LGBTQ Equality. We also received the 2017 Straight for Equality in the Workplace award from PFLAG, which recognizes outstanding leadership in creating inclusive and supportive workplaces for LGBTQ employees through the engagement of allies. In addition, Alcoa of Australia was named an Employer of Choice for Gender Equality by the Australian government for the 16th year in a row in early 2018 and a bronze employer on the Pride in Diversity Australian Workplace Equality Index.

Case Study

Apprenticeship Program Builds Trained Workforce for Alcoa, Community

Discouraged with not receiving hands-on, practical learning at college, Megan Phillips proactively pursued a spot in Alcoa of Australia's sought-after apprenticeship training program. Today, she's getting her hands dirty as a second-year electrical instrumentation apprentice at the Pinjarra refinery in Western Australia.

"I had an interest in the electrical instrumentation trade and wanted to work for a company that leads the resources industry in innovation and technologically advanced equipment," said Phillips. "My time as an apprentice has been an overwhelmingly positive experience. I've met an array of people from all different walks of life and gained world-class skills from experienced tradespeople."

Apprentice Megan Phillips

Each January, about two dozen apprentices who are selected from around 700 applicants begin a four-year program in electrical instrumentation, mechanical fitting, fabricator boiler making and heavy-duty plant mechanics at one of two Western Australia mines and three refineries.

Qualified tradespeople work one-on-one with each of the apprentices, who are paid during the program. All apprentices also undergo eight weeks of theoretical training at various technical colleges each year. Upon graduation, they receive a nationally recognized trade certificate in their respective areas of study.

Over the past five decades, more than 1,700 men and women have completed the apprenticeship program, which has evolved in length and format. While the graduates take their newfound skills to other employers in the local area and across Australia, Alcoa of Australia employs some high performers through normal recruitment processes.

"I'm among some of the best trained apprentices in the country, with a wide range of experience on various pieces of equipment," said Phillips. "By the end of my apprenticeship, I will have worked in mining, refining and a powerhouse. This diversifies my experience in the electrical instrumentation field and makes it transferable to a number of industries. If hired by Alcoa, I will be a third-generation Alcoan in my family."

Talent Acquisition

We are creating a more nimble and productive workforce by attracting the best talent that has the skills, values and ideals that align with our culture.

We use a modern, efficient approach that simplifies and streamlines our talent acquisition organization and processes. This allows our hiring managers, human resources, employees and prospective candidates to collaborate quickly and easily.

In 2017, we implemented a global recruitment process that provides a portal for all job postings within the company. Through this portal, internal and external candidates can apply electronically, monitor their application as it moves through the recruitment process, manage interview scheduling and communicate with our hiring team. To cultivate the best candidates within the company and promote mobility and career growth, we focus on our internal people first.

At the location level, we seek to hire from the local candidate pool whenever possible. We engage with universities to identify top local talent, and we offer internships and apprentices to help develop the local workforce.

A major initiative in 2017 was increasing the diversity of our candidates. We created job postings that are not gender-oriented, conducted training to address unconscious biasness in recruitment, implemented guidelines to provide a more diverse candidate pool to hiring managers and increased the diversity of our interviewers.

People Development

We believe people development should support our goal to reduce complexity and be more agile. To achieve this, we began transforming our program and creating a new vision for people development in 2017:

- **Everyone matters:** In alignment with our everyone culture, we recognize that every single employee has potential. It is our role to provide all employees with meaningful opportunities to help them achieve their full potential either within or beyond their current role.
- **Conversation is the core:** Conversation is at the core of the manager/employee relationship and has direct impact on employee engagement, development and retention.
- **Quality and quantity:** The ways and means in which we develop our people should focus on the quality and quantity of feedback and performance-based conversations. We are not checking the box. We are thinking outside of it.

Part of our effort to build a stronger everyone culture is redefining performance and creating a program that aligns with our behaviors and talent strategy. In 2017, we shifted to a new people development program that embraces this new way of thinking, refines the process to meet the needs of our business, welcomes new technology to keep it simple and enables our teams to perform and grow.

We replaced the three-times-a-year review process with frequent check-ins and untracked manager coaching. In support of the changes to the process, we partnered with external experts to offer coaching conversation training to our managers. Leveraging these same concepts, we will build on this training in 2018 to help all employees successfully use this new process.

We also launched a new behavior model that better aligns with our new Values and business strategy and more clearly defines career stages. In 2018, we will launch technology that will simplify the performance process and ensure our employees, managers and human resources professionals have access to the same information.

Alcoa Behavior Model

We will evaluate the program in 2018 to determine where we need to build and refine, all while layering on new technology that will enable us to become more efficient and fully integrated.

Learning and Development

Ensuring our people have the skills and knowledge they need to perform their roles is part of our everyone culture and fundamental to their success and that of our company.

In 2017, we created a three-year learning and development strategy focused on enhancing current programs, such as our Technical Leadership Excellence and Advancing Supervisory Excellence, that are aligned with our business strategies and strategic priorities. The strategy also includes identifying new ways to connect with our global workforce for a more engaging and effective learning experience outside of the classroom. We will continue this work in 2018 by deploying new learning technologies while delivering

Case Study

Sparking an Agent of Change

After working alongside leading scientists to collect climate change data, Patrick Lotteau channeled his need to do more by becoming an agent of change within his community.

Mr. Lotteau was one of eight Alcoa employees selected to spend one week in Churchill, Manitoba, Canada, as part of a 2017 professional development opportunity led by Earthwatch Institute and made possible by Alcoa and Alcoa Foundation. Since 2003, more than 280 employees from Alcoa Corporation and the former Alcoa Inc. have contributed in excess of 14,000 hours of research through the Earthwatch program.

“In 2015, I had the opportunity to attend the preparations for COP21 at the United Nations Climate Change Conference,” said Mr. Lotteau, Alcoa treasury manager for Europe who is located Geneva, Switzerland. “I spent one day talking to citizens from the Alpes region in France and shared feedback with citizens from other countries. It was then that I understood how critical the situation was and that I needed to take action.”

While on his Earthwatch expedition, Mr. Lotteau collected data on the area’s fish and frog populations to help scientists better understand how the changing climate is reshaping the local wetland ecosystem. He shared his learnings through a presentation at a local elementary school once back in Geneva.

“I was really surprised that most of the children had questions and wanted to share their own experiences,” said Mr. Lotteau. “I think they understand it is something very important for their generation.”

Mr. Lotteau is planning a 2018 student trip to the Mont Blanc region to meet with scientists researching changes to the mountain ecosystem due to environmental disruptions like climate change. He also will extend his outreach to a local middle school, and he plans to participate in a data collection program related to flora and fauna in the Alps.

“Since my Earthwatch expedition, I am even more convinced that I need to do more,” said Mr. Lotteau.

Developing agents of change is one of the objectives of the Earthwatch expeditions. Read more about the Alcoa Foundation and Earthwatch partnership.

Collection sampling

Helping train young students about climate change

ongoing programs in support of succession actions and development plans.

All employees and many Alcoa contractors have access to AlcoaLearn, our global online learning management system. In 2017, the system had more than 19,000 active employee and contractor accounts for tracking training and accessing online learning. It housed more than 8,000 online courses and supported the administration of 11,000 instructor-led training sessions for a total of 654,000 recorded training hours during the year. We also supported employee participation in professional certification, leadership development and other external training programs not tracked through our learning management system.

We also updated our internal 360 assessment tool, which is available for use by all employees, to fit with the new behavior model and our Values. This development tool was used extensively in 2017, from our front-line supervisors to our executive team members.

Compensation

To attract, retain and motivate our employees, we provide compensation that is competitive within the relevant labor market and reward exceptional performance and behaviors against business goals through our annual incentive plan.

In 2017, we linked 20 percent of our annual incentive compensation plan to non-financial metrics that were focused on achieving significant aspects of our sustainability targets. These included safety, diversity representation in our workforce and reductions in carbon dioxide emissions due to process improvements and improved energy efficiency.

While we exceeded our diversity target during the year, we did not meet the targets for the other two. The zero payout for safety was due to our operations experiencing three contactor fatalities during the year. Several performance-related issues at our refineries, lower raw material quality and interrupted power supplies at several smelters prevented us from achieving the carbon dioxide emissions target.

2017 Sustainability Variable Compensation Targets

Category	Percent of Annual Variable Compensation Plan Formula	Payout *Percent*
Safety	5	0
Diversity	10	12.7
Environment (carbon dioxide reductions)	5	0

For additional compensation information and data, see the Shared Value Creation section of this report and the Compensation Discussion and Analysis in our 2018 Proxy Statement.

Safety and Health

Our Care for People Value underscores our commitment to safety and health.

Our work can be dangerous and involves many types of operations. Process stability and equipping our people with skills, knowledge, controls and protection are required to avoid injuries and illnesses and, most importantly, fatalities.

Each day, we strive for what we believe is the attainable goal of zero fatalities and life-threatening or life-altering injuries and illnesses. It is an ambitious goal.

In 2017, we welcomed a new vice president of environment, health and safety to the Executive Team. Additionally, our Board of Directors reinforced our commitment to safety and corporate values by changing the name of the Public Issues Committee to the Safety, Sustainability and Public Issues Committee and amending the scope of that committee accordingly.

In 2018, we will remain focused on the safety of every employee, contractor, temporary worker and visitor who walks through our doors as our most important priority.

Safety

In 2017, we launched our 1Alcoa: United for Safety initiative to more deeply integrate temporary workers, contractors and visitors into our safety programs and data. This approach will further drive ownership of safety to include every person at our sites.

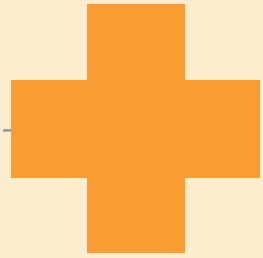
We were reminded of the importance of that goal when we experienced three contractor fatalities in 2017:

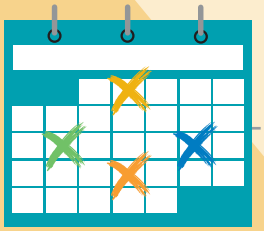
- At our Juruti mine in Brazil, a 14-meter (47-foot) tree snapped and struck a drilling contractor.
- A contactor conducting maintenance in the bake furnace at our San Ciprián smelter in Spain was struck by a crane.
- At our Alumar refinery in Brazil, a contractor working on a pneumatic-activated valve at sustained chemical and thermal burns.

We had 430 reported fatal and serious injury/illness potential (FSIP) events during 2017. We experienced a 42 percent increase in FSIP events compared to 2016 due to reported potential events. While we are not satisfied that these events increased, we view them as a good indicator that our

2017 at a Glance

3 fatalities (all contractors)





0.66 days away, restricted and transfer rate

0.26 lost workday rate

1.67 total recordable incident rate

locations are focused on identifying these events even if no injuries have occurred.

During 2017, we recalibrated how we collect data for traditional One Alcoa rates across our global operations. This resulted in significant increases in these rates year-over-year—113 percent increase for days away, restricted and transfer (DART) rate, 63 percent increase in our lost workday rate and 42 percent increase for total recordable incident rate. Despite this, all of these rates remained significantly below the most recent U.S. manufacturing averages. For example, our 2017 DART rate was 63 percent lower than the average.

Fatalities
Employees/all contractors

	Global	Australia	Europe	North America	South America
2013	**0/0**	0	0	0	0
2014	**0/1**	0	0	0/1	0
2015	**2/1**	0/1	0	2/0	0
2016	**0/1**	0	0	0	0/1
2017	**0/3**	0	0/1	0	0/2

Fatal and Serious Injuries/Illnesses
Employees and all contractors

	FSI Actuals *(Events resulting in a fatal or serious injury/illness)*	FSI Potentials *(Near-miss events)*	**Total FSI Events**
2014	14	795	**809**
2015	5	707	**712**
2016	5	303	**308**
2017	5	430	**435**

Data changes from prior reporting are due to recordkeeping audits and injury classification reviews. A serious injury/illness is any incident that is life-threatening or life-altering. We began formally tracking FSIs in 2014.

Days Away, Restricted and Transfer Rate
Employees and all contractors

	Global	U.S. Manufacturing Average	Australia	Europe	North America	South America
2013	**0.29**	2.2	1.06	0.15	0.48	0.17
2014	**0.39**	2.2	0.82	0.20	0.46	0.08
2015	**0.35**	2.2	0.47	0.30	0.40	0.11
2016	**0.31**	1.8	0.50	0.15	0.28	0.25
2017	**0.66**		0.83	0.56	0.87	0.28

The 2017 Bureau of Labor Statistics U.S. manufacturing industry average was not available at the time this report was published. Days away, restricted and transfer rate includes lost workday cases plus cases that involve days of restricted duty and job transfer per 100 full-time workers.

Lost Workday Rate
Employees and all contractors

	Global	U.S. Manufacturing Average	Australia	Europe	North America	South America
2013	**0.09**	1.0	0.38	0.10	0.06	0.07
2014	**0.13**	1.0	0.38	0.02	0.10	0.00
2015	**0.13**	1.3	0.23	0.07	0.13	0.05
2016	**0.16**	0.8	0.32	0.08	0.12	0.13
2017	**0.26**		0.46	0.11	0.20	0.20

The 2017 Bureau of Labor Statistics U.S. manufacturing industry average was not available at the time this report was published. Lost workday rate represents the number of injuries and illnesses resulting in one or more days away from work per 100 full-time workers.

Total Recordable Incident Rate
Employees and all contractors

	Global	U.S. Manufacturing Average	Australia	Europe	North America	South America
2013	**0.72**	4.0	2.17	0.43	1.29	0.47
2014	**1.27**	4.0	1.88	0.57	1.91	0.42
2015	**1.18**	3.8	1.35	0.82	1.63	0.44
2016	**1.18**	3.2	1.45	0.79	1.45	0.56
2017	**1.67**		1.91	1.22	2.51	0.57

The 2017 Bureau of Labor Statistics U.S. manufacturing industry average was not available at the time this report was published. Total recordable incident rate includes days away, restricted and transfer cases plus cases that involve days of medical treatment or other recordables per 100 full-time workers.

Comprehensive safety data are provided in the Appendix.

Safety Strategy

Our safety strategy in 2017 focused on preventing and/or mitigating fatalities and life-altering injuries.

We strive to understand how work is actually performed and its associated risks rather than how we perceive it to be performed. Our initiatives include:

- **Critical risk management:** Each location is responsible for developing a registry of all safety hazards and either eliminating the hazards or implementing controls to prevent and mitigate the risks associated with the hazards. Our corporate safety group -and each business unit provide global oversight and verification.
- **Critical 6 plus 1:** The hazards registry starts with tasks associated with our six most critical FSI hazard categories—mobile equipment, crane safety, confined space, fall control, lock/tag/verify and electrical. A seventh critical hazard is specific to each production process— haul trucks (mining), chemical burns (refining), molten metal (smelting/casting) and machine guarding (rolling).

- **Worker on Foot initiative:** Anytime a vehicle is in an area, no one on foot can be in that same area and vice versa. This goes beyond pedestrians to cover employees working in the area.
- **Human performance:** Locations must work toward certification in a core operating standard based on human performance, which teaches employees how to anticipate and recognize error and error-likely situations to predict, reduce, manage and prevent fatalities and injuries from occurring.
- **Skill builders:** These one- to two-day training sessions for new safety personnel and employees with single point of accountability for safety are focused on a critical safety topic. The topics for 2017 were contractor safety management, confined space and chemical burns.
- **EHS onboarding system:** Our onboarding system acclimates new EHS employees, plant managers and vice presidents of operations to our EHS culture.
- **Contractor safety process:** We use this process to evaluate the safety risk of each contractor and the work being performed to determine how much Alcoa oversight and intervention is required.
- **Stop work:** All of our employees are empowered to stop their work or that of a colleague if they believe the situation is unsafe or if they are unsure of the potential outcome. To recognize such proactive efforts, we present those who stop work with the Alcoa STOP coin.

In collaboration with location staff, our corporate safety experts also conducted periodic risk-based assessments at each location to identify high risks not through paperwork but an on-the-plant-floor evaluation.

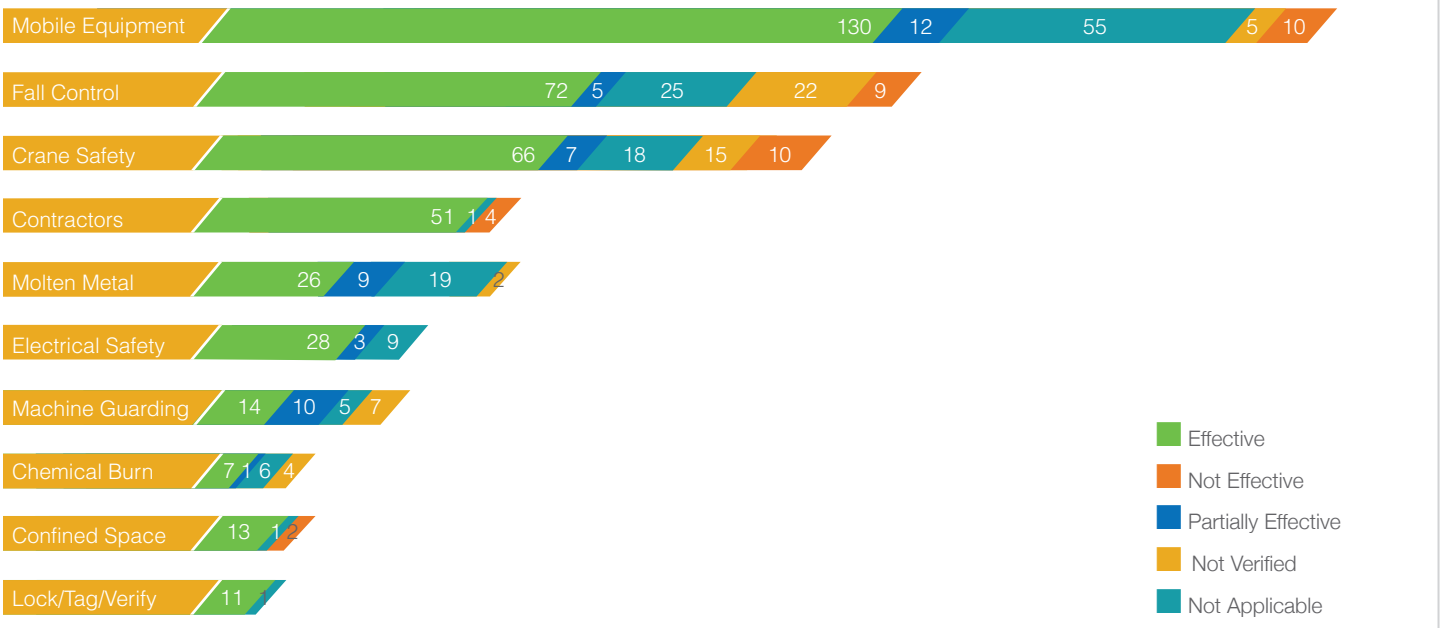
"Before joining Alcoa in late 2017, I was aware of the company's excellent reputation for health and safety. There is a deep and sincere interest to care for our coworkers like we care for our family, friends and neighbors. Combined with strong support from our board and CEO, this culture of caring will continue to move our health and safety performance forward and keep us from becoming complacent."

Francisco Benavides
Vice President, Environment, Health and Safety
Alcoa Corporation

These experts evaluate pre-determined controls required for the six most critical FSI hazards, the seventh FSI hazard for each respective process and contractors. Each control is classified as effective, not effective, partially effective, not applicable or not verified.

The following graph shows the combined results for the controls evaluated during assessments conducted at seven

2017 Risk-based Assessment Results



locations in 2017. For example, 130 of the mobile equipment controls (including those for haul trucks) evaluated at all of the locations were effective, while 12 were not effective, 55 were partially effective, five were not verified and 10 were not applicable.

In 2018, our strategy will transition to two pillars—systems and culture. We will continue to ensure our employees have the equipment, procedures and processes that allow them to do their work safely every time and everywhere.

We also will strengthen our culture by demonstrating that safety comes first—before production, before cost, before everything. It will be a culture of transparency and agility, where we openly and actively share both our good ideas and our setbacks; where we put the well-being of every Alcoan, temporary worker, contractor and visitor before any departmental or personal consideration; and where we show with our actions that safety is more important than other business imperatives.

Russel Diggins
Maintenance and Engineering Manager
Gum Springs, Arkansas, USA
Alcoa Corporation

"In 2017, I received second- and third-degree burns on my hands, arms and face from a natural gas explosion caused by human error. During recovery, I faced a life-threatening medical issue that doctors said was an outcome of the original injury. My wife and children were told to have a conversation with me because it could be the last one we would have. That experience gave me a different perspective on workplace safety. People can make choices that affect not only your life but that of your family, as happened to me, and you can make choices that do the same. We all need to understand that connection and focus on making the correct choices when it comes to safety. Hugs with my wife and children are a lot deeper now."

Health

We intend to prevent all future fatal and serious occupational disease, based on current knowledge assessment, through the implementation and monitoring of a robust range of exposure controls.

Guiding our efforts are internal health standards that often are more stringent than those specified by applicable law. We also proactively identify and respond to emerging health-related trends in our industry, and we have a long-standing relationship with the Health Committee of the International Aluminium Institute.

The health hazards inherent in our operations may include chemical, physical (noise, ergonomic, radiation, heat and vibration) and other types of hazards. Our locations have spent decades implementing processes, procedures, equipment and technologies to mitigate these risks and have made significant progress. In 2017, we enhanced these mitigation strategies by creating risk-based assessment templates for all health focus areas to direct our locations in their efforts to eliminate their specific health hazards.

Our most prevalent health hazard is noise due to the quantity, scale and nature of the equipment and processes used throughout our manufacturing operations. We have strict standards regarding the use of hearing protection and continually explore solutions for reducing noise and its magnitude.

In 2017, we began phasing in mandatory quantitative fit testing for hearing protection globally. All employees who are exposed to noise for 12 or more days per year must undergo periodic testing to ensure proper hearing protection and fit for the noise levels they experience. In 2017, we conducted testing on 83 percent of the initially targeted employees against a goal of 80 percent.

Regardless of a location's size, all employees have access to occupational medicine services to optimize their health and well-being. These services include regulatory or Alcoa-driven chemical surveillance evaluations, fitness-for-duty assessments, hearing evaluations, lung-function testing, work-related injury and illness evaluation and treatment, substance abuse testing, job-related immunizations and wellness.

To further improve the focus and efficiency of our periodic medical evaluation process, we will review and re-scope the existing model to better align with operational interests and occupational health best practices.

A major focus for our health and environmental teams in 2017 was the Registration, Evaluation, Authorization and

Restriction of Chemicals (REACH) regulation in Europe. After the separation from our former parent company in 2016, we created a new and appropriately scaled resource infrastructure. We also appointed a project manager, established new communication pathways within the company and narrowed the list of chemicals to those relevant to Alcoa Corporation rather than our former parent company.

Occupational Disease Rate

Employees/supervised contractors

	Global	Australia	Europe	North America	South America
2013	**0.62**	0.92	0.17	1.00	0.02
2014	**0.80**	0.90	0.38	1.38	0.06
2015	**1.17**	1.34	0.26	1.79	0.00
2016	**0.75**	1.13	0.13	0.99	0.00
2017	**0.85**	1.35	0.37	0.92	0.13

The occupational disease rate represents the number of reported illnesses per 100 full-time workers. This rate is heavily influenced by the inclusion of non-instantaneous hearing-loss incidents, which represent a substantial contribution to the overall occupational disease rate.

Occupational Disease Rate

Non-supervised contractors

	Global	Australia	Europe	North America	South America
2013	**0.11**	0.47	0.00	0.06	0.07
2014	**0.04**	0.23	0.00	0.00	0.00
2015	**0.14**	0.36	0.09	0.28	0.00
2016	**0.06**	0.21	0.00	0.07	0.00
2017	**0.05**	0.00	0.00	0.19	0.03

Regional rates may fluctuate significantly year-over-year because of the relatively small number of disease cases identified overall.

Occupational Disease Count by Gender

	Employees/Supervised Contractors		Non-supervised Contractors	
	Male	Female	Male	Female
2013	141	7	12	1
2014	171	6	4	0
2015	216	6	11	1
2016	110	6	3	1
2017	112	10	2	2

Case Study

Vaccination Program Minimizes Welder Pneumonia Risk

With recent research indicating welders are at increased risk for pneumonia, we voluntarily launched a free vaccination program in June 2017 for all employees who undertake any welding at our locations globally.

Research from Canada, Sweden and the United Kingdom found welders are two to three times more likely to contract pneumonia than the general population. The risk is even greater for pneumococcal pneumonia caused by the bacterium Streptococcus pneumoniae.

The reason why welders are at higher risk is not yet known, but researchers have implicated exposure to ferrous metal fumes. The pneumonia risk becomes the same as the general population once a person no longer welds.

“I’ve been welding for 33 years, and I knew nothing about the pneumonia risk,” said Wes Schulte, fixed maintenance operator at our Huntly Mine in Australia. “The vaccination program is a must for all personnel that weld. Prevention is the only way to go.”

In 2017, we offered all of our employees who weld the option of a single dose of the pneumococcal vaccine (23vPPV). We also advised and supported welders who smoke to quit the habit, as smoking also increases the risk of pneumonia. In addition, we continued our existing control measures that minimize exposure to welding fumes, such as local exhaust ventilation and respiratory protection.

In 2017, 137 employees participated in the free and voluntary vaccination program, which is ongoing. We also now offer the vaccination to all new employees who will be welding.

Wes Schulte

Supply Chain

Our suppliers are important partners in our sustainability journey.

Our sustainability approach covers the entire life cycle of a product, making it critically important for our suppliers and those who serve them to conduct business in a responsible, ethical and sustainable manner.

Our Global Supplier Sustainability Program allows us to assess and help improve the sustainability of key suppliers that pose the greatest sustainability risk to our company. These suppliers contribute the most to our carbon footprint, possess preferred status, are sole sources of supply, are located in emerging or high-risk countries or provide regulated commodities.

The program consists of four components:

- **Communicate expectations:** We clearly define our sustainability expectations and communicate them through discussions and our Supplier Standards.
- **Assess supplier:** We formally evaluate the maturity of our key suppliers' sustainability programs against our expectations and determine where improvements are needed.
- **Develop and educate:** For suppliers that we determine to be emerging or lagging in sustainability, we provide education and tools to develop and improve their programs. We also require action plans and demonstrated improvements in the development of their sustainability programs.
- **Monitor:** We reassess suppliers in the emerging and lagging categories annually. Those that do not demonstrate annual improvements are subject to a review by our procurement and sustainability lead teams and face the risk of losing our business.

2017 Supplier Sustainability Assessment Results

Percent of key suppliers

Leading	15
Active	66
Emerging	14
Lagging	4

Numbers do not add up to 100 due to rounding.

2017 at a Glance

81% of assessed suppliers were leading or active in sustainability

US$9.5 billion in purchased goods and services

We continued implementing a separate third-party supplier due-diligence program to further manage risk in our supply chain related to the areas of anti-bribery and corruption, trade compliance, child and slave labor, criminal history, human trafficking and conflict minerals.

We are also an active participant in the Aluminum Stewardship Initiative, which will help us further embed sustainability into our supply chain.

Global Supplier Sustainability Program—Supplier Assessment Criteria

Supplier Sustainability Focus Area	Assessment Topics
Suppliers develop and implement a sustainability program that includes environmental, social, economic and ethical aspects; such programs are published publicly; suppliers cascade same to their supply base.	• Labor practices • Health and safety programs • Business ethics policies • Community commitment programs • Risk management (financial management and security of supply • Publicly disclosed policies and procedures • Cascade principles and policies to supply base
Suppliers integrate sustainability into their business strategy and support it through their values and culture	• Value systems • Participation in sustainability indexes or reporting frameworks • Incorporation of sustainability into market strategy • Live cycle advantages/disadvantages of key products
Suppliers measure performance and establish quantifiable environmental goals; progress on environmental goals publicly disclosed	• Environmental goals and metrics • Recycling programs • Measurement systems • Public disclosure/third party assessment

Procurement Spend

In 2017, we purchased US$9.5 billion in goods and services from thousands of suppliers around the world.

2017 Spend by Region

Region	Procurement Spend *Billions of U.S. dollars*	Supply Base Composition *Percent of total supply base*
Australia	1.8	19
Europe	2.0	21
North America	4.3	45
South America	1.4	15
Total	**9.5**	**100**

Related Information

Supplier Standards
Ethics and Compliance
Human Rights Policy

Improving Our Footprint

Climate Protection

We have a strong history of leadership in reducing greenhouse gases in the aluminum industry.

Carbon dioxide represents most of our GHG emissions, with our smelters being the largest emitters. Through ambitious reduction goals, focused programs and the closure of high-emitting facilities, we reduced our carbon dioxide equivalent (CO_{2e}) emissions intensity by 46.5 percent between our 2005 baseline and 2017.

This result again exceeded our targets of a 30 percent reduction in total intensity by 2020 and 35 percent by 2030. We established a new goal for 2018 onward that calls for reducing our GHG footprint (direct and indirect emissions) from our smelting operations by 15 percent by 2025 and 20 percent by 2030 from a 2015 baseline.

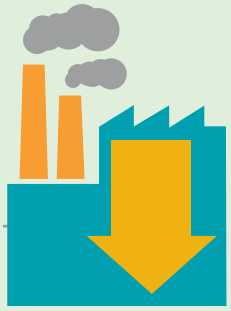
Nicolette Bartlett
Director of Climate Change
CDP

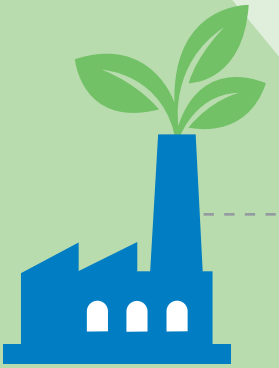
"Alcoa Corporation has continued the long tradition of its former parent company by disclosing its carbon emissions and climate risk management strategies to CDP. The comprehensive disclosures demonstrate that Alcoa has processes in place for identifying potential climate risks and opportunities, and it has started to implement changes to business strategy with oversight from its board. Alcoa has measured and disclosed its Scope 1 and 2 emissions and has taken steps toward stronger engagement on climate change across its value chain."

Our total 2017 CO_{2e} emissions equaled 22.9 million metric tons, of which 16.5 million metric tons were direct emissions. This represents a 10.9 percent reduction in total emissions and a 15.3 percent decline in intensity compared to 2016. The main contributors to the year's reductions were reduced production at Portland Aluminium in Australia, the previous closure of our Warrick smelter and stability improvements at our Intalco smelter in the United States.

2017 at a Glance

10.9% reduction in carbon dioxide equivalent emissions





15.3% decline in carbon dioxide equivalent emission intensity

5% of annual variable compensation connected to carbon dioxide emissions reduction

Our Scope 3 (supply chain) emissions in 2017 were 38.7 million metric tons of CO_{2e} for six categories—purchased goods and services; fuels and energy related activities; waste generated in operations; business travel; product transportation and distribution (downstream); and processing of intermediate products sold to customers.

We engaged First Environment to provide limited third-party assurance on our 2017 carbon emissions data. The company's verification statement is available in the appendix.

We are analyzing the recommendations from the Task Force on Climate-related Financial Disclosures to identify how we can provide additional information and transparency on our climate protection efforts and performance.

Carbon Dioxide Equivalent Emissions Intensity
Metric tons of CO_{2e} per metric ton of production

	Refining	Smelting *(IPCC,4th TAR)*	Total *(IPCC, 4th TAR)*
2005 Baseline	0.61	8.92	10.08
2013	0.56	6.44	7.50
2014	0.55	6.42	7.46
2015	0.54	6.21	7.23
2016	0.54	5.34	6.36
2017	0.53	4.39	5.39

Data are for Scope 1 and Scope 2 emissions. The total represents the combined impact of refining and smelting operations indexed to metric tons of primary aluminum production (refining is included at a ratio of 1.9 metric tons of alumina to 1.0 metric tons of smelted aluminum). These two processes and their associated power supply represent 82 percent of our total GHG emissions. Calculations of these emission intensities conform to the IAI Aluminium Sector Greenhouse Gas Protocol using 100-year global warming potentials provided by the Intergovernmental Panel on Climate Change (IPCC). The phrase "4th TAR" stands for Fourth Technical Assessment Report. In accordance with guidance from the Greenhouse Gas Protocol developed by the World Resources Institute and World Business Council on Sustainable Development, we have removed from our data set emissions associated with locations that we have sold over the past several years.

Carbon Dioxide Equivalent Emissions
Million metric tons

	Direct *(Scope 1)*	Indirect *(Scope 2)*	Total
2013	25.2	11.6	36.8
2014	24.0	10.4	34.4
2015	22.8	8.8	31.6
2016	17.7	8.0	25.7
2017	16.5	6.4	22.9

Of our 22.9 million metric tons of CO_{2e} emissions in 2017, 21.8 million metric tons were associated with carbon dioxide, 1.01 million metric tons were associated with perfluorocarbon (CF4 & C2F6) emissions, 50,000 metric tons were associated with methane, 30,000 metric tons were associated with nitrous oxide and 6,000 metric tons were associated with SF6. There were no significant hydrofluorocarbon emissions. We had 4,000 metric tons of biogenic CO_{2e} emissions from the combustion of biodiesel. These emissions are not included in the total 2017 CO_{2e} emissions. Estimated indirect CO_{2e} emissions are those occurring at our purchased electricity and steam supplier facilities.

Climate Strategy

Our climate strategy encompasses five pillars that reflect our challenges and opportunities. In 2017, our strategy and performance achieved the aluminum industry's top position on the Dow Jones Sustainability Index.

Reduction in Energy Consumption

The quantity of our GHG emissions is directly related to the type and amount of energy that we consume. We are working to increase our use of low-impact energy sources and also improve the energy efficiency of our operations. A full discussion of our energy strategy can be found in the Energy section.

To ensure our salaried managers and leaders are engaged in this issue, we connected 5 percent of their 2017 annual incentive compensation to whether they made further carbon dioxide reductions through process upgrades and improved energy efficiency. We achieved 0 percent.

Carbon Reduction

Through programs aimed at reducing specific GHG emissions, we made significant progress in reducing our carbon footprint as part of our former parent company. Curtailment or closure of facilities, some of which were among our highest emitters, also contributed to our emissions reductions.

To get to the next level of carbon reductions, we are increasing our focus on technology. We must first better understand the technological limits within our current operations, especially our oldest smelters, and then develop new or deploy existing technology to help achieve our reduction goals. The latest example of our efforts is the revolutionary Elysis process, which eliminates direct greenhouse gas emissions from the traditional smelting process. (Learn more.)

Carbon Offsets and Credit Trading

Countries around the world are moving at different speeds toward strengthened regulations for carbon emissions. Our experience with the carbon markets in Europe and Canada will inform our approach to future pricing mechanisms used to reduce carbon emissions.

We anticipate that Phase 4 of the European Union's Emission Trading Scheme, which covers the period 2021 to 2030, will have a direct impact on both our carbon and energy pricing. In the United States, we anticipate that the rollback of the

Clean Power Plan will delay the impact of CO_2 requirements at our coal-fired Warrick power plant in Indiana. In addition, regulatory changes anticipated in the state of Washington in 2018 may impact our smelters there.

We are working to better understand opportunities to offset our emissions through projects like the United Nations' Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD+) program.

Products

We are developing greener products to help our customers deliver more sustainable products to society and value the use of carbon-free energy in our value chain. A recent example is our SUSTANA line of aluminum products, which we produce with low carbon emissions and recycled content. (See the Products section.)

We are also active in the development of standards that incorporate carbon measures into the value of products.

Case Study

Helping Wildlife, Rural Communities in a Changing Climate

Recognizing that wildlife and rural communities in developing countries are highly vulnerable to the impacts of climate change, World Wildlife Fund (WWF) is developing adaptation strategies for both with the support of Alcoa Foundation.

Funded entirely by Alcoa Foundation in its first year, WWF's Wildlife Adaptation Innovation Fund supports the testing of new ideas through on-the-ground projects. Pilot projects funded in 2017 included:

- India: Preserving high-elevation habitat for red panda populations by working with local communities to minimize habitat encroachment for firewood collection; develop a plan for forest fire management; and regulate the extraction of wild plants.
- Australia: Constructing high-quality artificial nests for shy albatross to improve breeding success and provide a buffer to the increasing frequency and intensity of extreme rainfall events that wash away nests.
- Russia: Relocating Pacific walrus carcasses away from haul-out sites on land where they exit the water to reduce the frequency of predator disturbances and stampede events that result in injury or death.

Alcoa Foundation is also supporting WWF Climate Crowd, which is crowdsourcing large amounts of data on how vulnerable communities are affected by changes in weather and climate, how they are coping with these changes and how their responses might be negatively impacting biodiversity. WWF then works with local communities to develop appropriate climate adaptation solutions.

"Indigenous, local and traditional knowledge systems can be a major resource for adapting to climate change, but we need to better integrate this knowledge with existing practices to increase their effectiveness," said Nikhil Advani, WWF lead specialist for climate, communities and biodiversity. "Most research to date has focused on the direct impacts of climate change to biodiversity, but it largely neglected indirect impacts caused by people responding to the harmful effects of climate change."

He adds, "Thanks to Alcoa Foundation's funding, which greatly expanded data collection, we had more than 900 reports from 30 countries by the end of 2017."

Photo credit: Rachael Alderman

Shy albatross with chick on an artificial nest

The Corporate Average Fuel Economy (CAFE) standards in the United States, for example, are encouraging automakers to use aluminum and other lightweight materials to meet more stringent fuel-efficiency requirements.

Advocacy

Through industry associations and direct contact, we engage with global stakeholders on the issue of greenhouse gases to ensure fair and effective policies and regulations. These stakeholders include elected officials, government agencies and non-governmental organizations.

As an active member of the Standards Setting committee of the Aluminum Stewardship Initiative, we helped develop industry standards that include GHG emissions. We are also working through organizations like the Aluminium Association of Canada, Australian Aluminium Council, European Aluminium, International Aluminium Institute and The Aluminum Association to inform the industry's approach to, and engagement on, carbon regulation.

During 2017, we continued to engage with government representatives, legislators, non-governmental organizations and other stakeholders in the U.S. state of Washington on the potential carbon legislation. We also interacted with stakeholders in the European Union on the revision of the Emission Trading Scheme Directive and Clean Energy for All Europeans package. In addition, we finalized discussions with the Quebec government regarding its cap and trade program for 2020 to 2023. Negotiations for 2024 to 2030 continue.

Alcoa Foundation is engaging with governmental and non-governmental organizations to advocate the prevention of, and resilience to, climate change. In 2017, the foundation supported research from the World Resources Institute (WRI) on how companies worldwide currently make and use estimates of avoided GHG emissions to develop and promote low-carbon products that would aid the transition to a more sustainable future. The results will be used as the basis for deciding whether to develop international standards for the accounting and reporting of avoided emissions.

Related Information

Energy

Energy

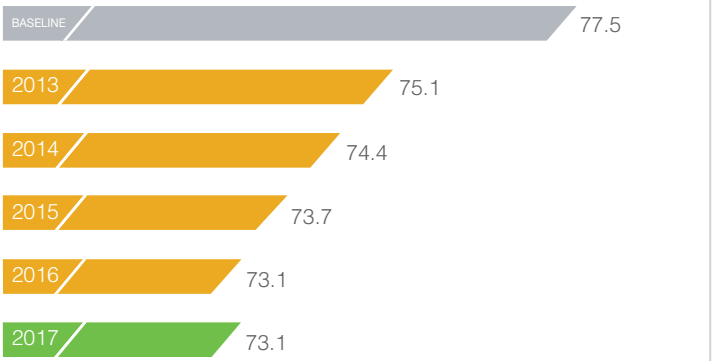
Energy is a critical resource for our operations, particularly our energy-intensive refining and smelting processes.

Securing low-cost, low-environmental-impact and long-term energy is a focal point of our energy strategy. We also reduce the amount of energy we consume through operational efficiency and technological advances, all of which lower our energy costs and reduce our greenhouse gas emissions.

During 2017, our sustainability target was a 10 percent reduction in energy intensity by 2020 and 15 percent by 2030 from a 2005 baseline. We achieved a 5.7 percent intensity reduction against the baseline during the year. Our overall energy consumption declined by 19.2 million gigajoules, or 5.7 percent, compared to 2016.

Energy Intensity

Gigajoules per metric ton of aluminum produced



Data changes from prior reporting are due to updates to the database. Energy intensity values reflect the net energy value after energy sold to the grid. Refining is included at a ratio of 1.9 metric tons of alumina produced to 1.0 metric tons of smelted aluminum.

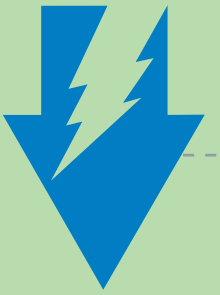
2017 Energy by Source

Source	Direct		Purchased Electricity	
	Gigajoules	*Percent*	*Megawatt hours*	*Percent*
Natural Gas	108,486,571	65	4,382,907	10
Hydro	-	-	27,348,023	65
Coal	43,537,515	26	4,447,001	11
Oil	11,485,141	7	111,865	0
Other Renewables	59,388	0	3,067,084	7
Diesel	2,971,705	2	1,574,861	4
Nuclear	-	-	1,398,535	3
Propane	100,670	0	-	-
Distillates	68,115	0	-	-
Local Grid	-	-	31,369	0
Total	**166,709,105**	**100**	**42,361,646**	**100**

Other renewables include geothermal, biomass, solar and wind energy.

2017 at a Glance

5.7% reduction in energy consumption



75% of the electricity consumed by our smelters was from renewable sources

For energy consumption, we use the Greenhouse Gas Protocol developed by the World Resources Institute and World Business Council on Sustainable Development to establish boundaries for our calculations and account for mergers, acquisitions, divestitures, startups and closures of operating facilities. We report energy consumption based on management control and the location-based method as defined in the Greenhouse Gas Protocol. The Intergovernmental Panel on Climate Change Guidelines and country-specific databases, such as the U.S. Environmental Protection Agency's Emissions & Generation Resource Integrated Database, continue to serve as our source of data on the characteristics of electric power generation and heat content values for fuel sources.

First Environment provided third-party verification of our 2017 energy data. (View the verification statement.)

Energy Security

Our internal energy team is responsible for purchasing approximately 350 Tera joules of natural gas per day and supplementing our self-generated power with approximately 4.4 gigawatts of purchased electricity. More than half of our purchased natural gas and electricity is under long-term contracts that exceed 10 years.

Our smelters are our largest consumers of electricity, and renewable sources comprised approximately 75 percent of their energy consumption in 2017.

Our smelters in Deschambault, Baie-Comeau and Bécancour in Canada are supplied almost entirely with hydroelectricity. Hydroelectricity accounts for 100 percent of purchased energy used by our Alcoa Fjardaál smelter in Iceland and Massena location in the United States. Our Mosjøen and Lista smelters in Norway, both of which are certified to the ISO 50001 energy management standard, use 98 percent hydroelectricity.

Our portfolio of energy assets is composed of wholly-owned facilities and equity interests in consortiums. Our share of the generation capacity of these assets is 1.5 gigawatts, of which more than 55 percent is low-cost hydroelectric power capacity.

We also profit from selling our excess power production to regional and wholesale markets. In 2017, we sold approximately 70 percent of the power we generated to these markets.

Mosjøen smelter

"Power purchase agreements like the one Alcoa signed in Norway provide the necessary predictability for successful development of the wind industry in particular and renewable energy in general"

Benny Rahbek
Commercial Head of Sales & Marketing, Northern Europe and Middle East
Siemens Gamesa

In October 2017, we signed two long-term renewable power purchase agreements with Norsk Miljokraft Tromso and Norsk Miljokraft Raudfjell for power that will be produced by two windfarms that are being constructed in northern Norway. The companies will install wind turbines manufactured by Siemens Gamesa Renewable Energy. The 15-year agreements cover the period 2020 through 2034.

Operational Efficiency

We use a variety of approaches to improve operational energy efficiency, including:

- **Benchmarking:** We identify opportunities to compare our operations against industry leaders.
- **University collaborations:** We access the expertise at various universities around the world to develop solutions to our energy challenges.
- **Best practice sharing:** Through our internal Centers of Excellence, we share best practices and transfer operational improvements through numerous channels, including a network of Alcoa experts who provide direction and training to plant technical staff and operators.
- **Location-specific targets:** We set and monitor energy-efficiency targets for each location and develop an implementation roadmap, taking into account process variations from facility to facility.

Our refining operations have implemented significant process improvements over the past few years that focused primarily on process controls, heat transfer efficiency and maintenance improvements. These efforts resulted in our refineries setting a system-wide energy-efficiency record in 2017.

All of our smelters have realized efficiency improvements with the use of the SMART manufacturing platform, which displays process information so our employees can take action to

conserve energy. Our smelters are also focused on identifying raw materials or design changes that could lead to either more conductive or more efficient management of a smelting pot's heat balance.

Our casthouses are implementing new technologies that drive energy efficiency, such as oxy-fuel burners that use pure oxygen rather than air in a furnace's combustion process to avoid the unnecessary heating of air's nitrogen component. We have installed magnetic stirring technologies at two smelters to more efficiently mix molten metals, and we have implemented program and hardware changes on our furnace control systems to better regulate pressure and temperature.

Technological Advances

Our heritage is in developing new technologies for the aluminum industry—including developing the commercial aluminum industry in 1888.

Our experts created low-energy smelting cells and improved electrical connections. Our advanced process simulation capabilities create real-world technological advances in alumina refining.

We are also investing in the long-term for potential step-change outcomes. For alumina refining, our experts are examining the use of solar energy to power the calcination process and solar gas reforming (using solar energy to increase a gas stream's energy). In aluminum smelting, we continue to invest in research and development to improve energy efficiency and reduce carbon dioxide emissions.

Demand Response Initiatives

Unlike other energy sources, such as oil or gas, electricity cannot be stored economically. The electricity produced (generation) must be balanced with the electricity consumed (load) on a real-time basis to preserve the stability of the electrical grid and prevent blackouts and other system disruptions. The challenge for utilities is that the normal peaks and valleys of demand vary throughout each day, by season and by region.

Demand response is a practice where certain customers, usually larger ones, adjust their electrical load in response to a signal from a utility or the electric grid. This adjustment by the customer helps the utility manage the stability of the electrical system by balancing generation and load. The customer is paid for this service.

Our U.S. smelters participate in demand response, providing some or all of the following services:

- **Capacity:** A portion of a customer's load is considered system capacity so that the utility may avoid spending money to build additional generation to meet its reserve capacity requirements.
- **Emergency demand response:** A customer will respond within minutes to reduce large blocks of load for short periods of time to balance spikes in demand from other parts of the electric grid. The overall system remains in balance as a result.
- **Spinning reserves:** This service is similar to emergency demand response but on a smaller scale and shorter length of time.
- **Load imbalance:** For grids that use solar or wind power, which are intermittent sources of energy, a customer's load is used to keep the grid in balance.
- **Regulation response:** A small percentage of a customer's load is controlled directly by the utility, allowing for real-time adjustments to assist with managing the grid.

In Australia, we have an electricity demand management program for our smelters and refinery where we reduce our demand for electricity during the hottest days of the year, which generally coincide with the highest demand for electricity. This helps support efficient investment in electricity infrastructure and avoids additional costs of electricity generation to cover events that only occur a few times a year.

Our production facilities in Spain and Norway provide load interruptibility to their respective transmission system operator to help manage the risk of system electrical blackouts. The facilities are remunerated for providing these services.

In Canada, we provide interruption rights to our power supplier under our long-term supply contracts.

Related Information

Climate Protection

Biodiversity and Mine Rehabilitation

We operate in a manner that aims to minimize our environmental impacts and promote sustainable use.

Biodiversity

We endorse biodiversity conservation. Our approach is to minimize the disturbance of any original habitat and seek to avoid designated protected areas, such as national parks and nature reserves, where strict nature conservation is the management objective.

We have committed to not explore, mine or operate in World Heritage sites. We believe our operations and biodiversity conservation can coexist on the same land, having successfully operated bauxite mines, alumina refineries and aluminum smelters within areas of high biodiversity value. Where areas are disturbed, we work to restore those lands to a productive use. When feasible, this includes efforts to reestablish pre-operating conditions.

Biodiversity impacts from our operations vary, and we implement industry-leading processes and techniques to mitigate disruption to vegetation, animals and natural resources. For example, mining bauxite requires shallow pits, haul roads and other infrastructure that involves the removal of native vegetation. We use progressive rehabilitation techniques to return this land to either a native state or other sustainable use.

2017 at a Glance

1.01:1 ratio for new active mining disturbance to mine rehabilitation for the 2013 to 2017 period

Our mining operations in Western Australia, Portland Aluminium smelter in Australia and Juruti mine in Brazil have developed and implemented biodiversity action plans that:

- Identify the biodiversity values of the land, including the presence of threatened species and communities, in context with surrounding land;
- Pinpoint potential impacts, both positive and negative;
- Develop a range of strategies aimed at minimizing or mitigating biodiversity impacts;
- Inform our employees and communities where we operate about the importance of biodiversity protection, and encourage their participation in biodiversity initiatives; and
- Sets and reports performance against site-specific targets.

These three plans will serve as models for other locations when appropriate.

Rachel Biderman
Executive Director
WRI Brasil

"WRI Brasil, with support from Alcoa Foundation and local partners in Pará, conducted capacity-building training for more than 50 women and 40 men on forest restoration and the role of women in that activity. Attendees included state government leaders, NGO representatives, researchers, students, farmers, smallholders and private sector representatives. This effort was an additional step in mobilizing local communities to restore lands by planting native trees and thus restoring bodies of water. The partnership with Alcoa is an example that it is possible to optimize resources and increase project impacts with social and environmental gains."

Sites Within or Adjacent to Protected Areas or Areas of High Biodiversity Value

Operational Site	Site Location & Size	Position	Biodiversity Value
Huntly and Willowdale bauxite mines	Jarrah Forest, Western Australia 712,900 hectares (1,761,614 acres)	Adjacent to protected areas; within an area of high biodiversity value	Recognized by Conservation International as an international biodiversity hotspot; threatened species and ecological communities (International Union for Conservation of Nature and federal government listed)
Anglesea power station and related coal mine (closed in August 2015)	Anglesea, Victoria, Australia 787 hectares (1,945 acres)	Within and adjacent to a protected area	Protected area; threatened species and ecological communities (International Union for Conservation of Nature and federal government listed)
Wagerup alumina refinery	Wagerup, Western Australia 6,000 hectares (14,826 acres)	Adjacent to areas of high biodiversity value	Ramsar listed wetlands adjacent; threatened species and ecological communities (International Union for Conservation of Nature and federal government listed)
Portland Aluminium smelter	Portland, Victoria, Australia 500 hectares (1,236 acres)	Adjacent to a protected area	Threatened species and ecological communities (International Union for Conservation of Nature and federal government listed)
Juruti bauxite mine and related railroad and port facility	Juruti, Pará, Brazil 29,426 hectares (72,713 acres)	Within an area of high biodiversity value	Amazon rainforest and river; threatened species and ecological communities (International Union for Conservation of Nature listed)
Poços de Caldas operations (bauxite mine, alumina refinery and aluminum smelter—the smelter closed in June 2015)	Poços de Caldas, Minas Gerais, Brazil 2,327 hectares (5,750 acres)	Within an area of biodiversity value	Fragmented native forests; threatened species (International Union for Conservation of Nature listed)
Coermotibo bauxite mine operations (ceased operation in October 2015)	Marowijne District, Suriname 32,800 hectares (81,051 acres)	Adjacent to and within a protected area	Adjacent to and within International Union for Conservation of Nature protected area; threatened species (International Union for Conservation of Nature listed)
Point Comfort alumina refinery (fully curtailed in 2016)	Point Comfort, Texas, USA 1,417 hectares (3,501 acres)	Adjacent to a protected area	Native grassland and intertidal emergent marsh (protected under the Clean Water Act); threatened species (International Union for Conservation of Nature and federal government listed)

Protected area status follows definitions described in Dudley (2008). Guidelines for Applying Protected Area Management Categories. Gland, Switzerland: IUCN. x + 86pp.

Environmental Impact Assessments

Prior to commencing new construction projects or significantly expanding existing facilities, we conduct an environmental impact assessment to determine what, if any, impacts the project would have on the environment. This thorough analysis uses techniques, procedures and information generally accepted by the international scientific community as leading practices.

We document the level of ecosystem and species diversity within the area of direct management control or significant influence and incorporate measures to minimize adverse impacts. We give particular attention to the conservation of threatened species, critical habitats and unique floral and faunal communities.

Ecosystem Services

Ecosystem services are benefits obtained from natural ecosystems. These may be goods or raw materials, such as food, timber or freshwater. They also may be services carried out by ecosystems, including mitigation of climate impacts associated with human activity, erosion control and disease control. A company can both benefit from ecosystem services as well as impact them.

There are many situations where ecosystem services benefit our business. These include the provision of essential water supplies for our operations; management of forested land in our hydropower watersheds; reclamation of mined land by providing seeds of native plants, naturally re-colonizing microorganisms, flora and fauna; and restoration of ecosystem processes, such as nutrient, carbon and water cycles, that ensure long-term success.

Case Study

Helping Communities Care for the Environment

An award-winning partnership provides a simple process for community groups to seek grants that restore and protect an environmentally rich and culturally important area of Western Australia.

Since 1998, the Swan Alcoa Landcare Program (SALP) has provided nearly US$6 million (A$8 million) in funding for some 1,300 on-the-ground projects that protect and restore the catchment areas of Perth's iconic Swan and Canning rivers. The SALP program is administered by Perth NRM and funded by Alcoa of Australia and the Department of Biodiversity, Conservation and Attractions (DBCA). It was recognized as the best Australian government partnership for land care at the 2017 Western Australian Landcare Awards.

Volunteers revegetating a riverbank

The catchment areas, which are home to a wide range of flora and fauna, are prized for their natural values, recreational opportunities, and cultural and social importance. Over time, vast tracts have been cleared for agriculture and development or used for landfill and wetlands. Creeks were filled, channeled and piped, and river mouths were widened and deepened. All impacted the local ecosystem.

SALP grants have funded volunteer efforts for debris removal, disease management, erosion management, fencing, pest management, revegetation, seed collection and weed treatment. Project volunteers have contributed more than 176,000 hours, planted 2.4 million plants, revegetated 1,927 hectares (4,762 acres) and controlled weeds on 4,762 hectares (11,767 acres).

"SALP has given community groups continuity and enabled them to plan larger projects spanning multiple years, which allows partnerships and community networks to both develop and strengthen," said Melinda McAndrew, SALP program manager for Perth NRM. "Longer-term funding enables groups to achieve significant environmental outcomes, and this success makes them more attractive to new volunteers, partners and other funders. The long-term involvement of Alcoa also makes groups feel their work is valued and important."

Our Juruti mine in Brazil was the site of an independent research project to develop and test an ecosystems services-based framework called Ecosystem Services Approach to Rehabilitation that evaluates land rehabilitation in mining. The research has now expanded to our mines in Western Australia, and results are expected to be available by the end of 2018.

Mine Rehabilitation

We believe mining is only a temporary use of the land.

We engage with stakeholders to develop a rehabilitation plan, ensuring the site can be returned to sustainable use. In many cases, we strive to return the land to its natural state, such as forests, swamps and grasslands. Where appropriate and in concert with government or local communities,

A mature rehabilitated jarrah forest in Western Australia

Case Study

Alcoa-funded Research Eradicates Biological Bulldozer

An effort to prevent the spread of a destructive plant disease in Western Australia kept one of our bauxite mining areas free of this "biological bulldozer" and led to an environmentally friendly technique that can restore health to infested forests in as little as two years.

Dieback disease is caused by the soil-borne pathogen *Phytophthora cinnamomi*, which kills plants by destroying their root structure. Managing the disease, which is found in more than 70 countries, has been the subject of decades-long research by Alcoa and partner Murdoch University.

From May 2013 to March 2015, our Western Australia mining operations needed to move equipment along both dieback-infested and dieback-free haul roads that run through the region's unique jarrah forest. To prevent the spread of the disease, we redesigned the berms, sumps and drainage of the haul roads that ran through dieback-free forest to contain any infection. We also trained and educated employees and contractors on new dieback-prevention procedures, with strict auditing of operations.

Photo credit: Dr. William Dunstan

Retrieving a sample to test for Phytophthora cinnamomi

Once the project concluded, we closed the haul roads in the dieback-free area and trialed the farming technique of fallowing—keeping land free of vegetation—to eradicate the pathogen. The technique had not been applied before on such a scale anywhere in the world.

"All of the existing research indicated that *Phytophthora cinnamomi* could never be eliminated since it would survive in the soil in a dormant state," said Giles Hardy, associate dean of research for Murdoch University's School of Veterinary and Life Sciences. "After studying the pathogen's entire life cycle, we determined that it needed a plant host to survive. It could not live on its own in the soil. This was a major breakthrough."

Two years after closing the haul roads, testing by Murdoch University found zero indications of dieback. This included deliberately infected samples the university placed in trial sections along the roads.

"This research tells us that we can return infested forest to a dieback-free state with no need for harmful chemicals," said Hardy. "A lot of people and ecosystems around the world will benefit from this Alcoa-funded research."

our rehabilitation supports other productive land uses, including farming and residential, commercial or industrial developments.

We strive to lessen the impact of our mining operations by minimizing the environmental footprint for each mine. This includes not only minimizing the land disturbed for mining, but also the amount disturbed for the long-term infrastructure needed to support mining activities, such as haul roads, rail lines and washing plants.

To achieve this, any excess land disturbed for mining is rehabilitated. Each active mine also has a strategic management plan for long-term infrastructure, committing to repurpose the buildings, haul roads and railroads. Areas that cannot be repurposed are rehabilitated.

During 2017, we had four active bauxite mining areas in Australia and Brazil and one active coal mine in the United States. A number of inactive mines also contributed to the year's total open area. We also have a minority equity interest in a bauxite mine in each of three countries—Brazil, Guinea and Saudi Arabia—but data from these mines are not included in this sustainability report.

Moving forward, our goal is to maintain a corporate-wide running five-year average ratio of 1:1 or better for active mining disturbance (excluding long-term infrastructure) to mine rehabilitation. This will manage net expansion in land disturbed.

The ratio for the 2013 to 2017 period was 1.01:1. We expect the ratio to decrease as more areas at our closed mines in Suriname are progressively returned to the Suriname government after rehabilitation.

Mining Land Disturbed/Land Rehabilitated

Hectares

	Open Mine Area *Cumulative as of year-end*	Area Disturbed *Annual*	Area Rehabilitated *Annual*
2013	15,111	1,437	1,140
2014	15,632	1,414	1,008
2015	14,893	1,195	1,293
2016	15,283	1,028	646
2017	15,448	1,173	1,008

One hectare equals approximately 2.5 acres. Open mine area is the cumulative area of land that has not been rehabilitated (including active mines and land used for mining infrastructure). Area disturbed means annual land used in each reported year for mining or for mining infrastructure (e.g., roads, shops, crushing equipment, conveyors). Area rehabilitated means annual land returned to natural conditions or to productive use (such as farming) after mining or decommissioning of mine infrastructure in each reported year.

Generally, the open mine area in each succeeding year should be the open mine area from the preceding year plus any area disturbed and minus any area rehabilitated. Because the open mine areas are independently reviewed and corrected from time to time, this calculation utilizing the figures in the table above is unable to be applied precisely.

Open Mine Area

Hectares

	Australia	Europe/ Africa	North America	South America	**Total**
2013	4,562	0	1,248	9,301	**15,111**
2014	4,804	0	1,261	9,567	**15,632**
2015	5,009	0	1,191	8,693	**14,893**
2016	5,351	0	1,128	8,804	**15,283**
2017	5,614	0	1,068	8,766	**15,448**

Open mine area is the cumulative area of land that has not been rehabilitated, which includes active mines and land used for mining infrastructure.

North America data for all years include a total of 63 hectares (541 acres) of land at the inactive Squaw Creek coal mine in Indiana (USA), which has been rehabilitated but is awaiting the final phase of bond release. A total of 192 hectares (474 acres) at the Friendsville Mine (coal mine in Illinois, USA), which was sold in 2016, is also included in the total pending bond release in 2018. In Australia, the 2017 open mine area includes the Anglesea coal mine, which closed in 2015. The open mine area in Australia increased in 2017 mostly due to a range of operational constraints that limited the availability of areas for rehabilitation at the Huntly mine. Mined areas at the previous crusher region of McCoy, which remained open to successfully eradicate potential infection of haul roads by the pathogen Phytophthora cinnamomi*, are being rehabilitated. That work is expected to be completed by 2020.*

Area Disturbed for Mining and Associated Infrastructure

Hectares

	Australia	Europe/ Africa	North America	South America	**Total**
2013	890	0	268	279	**1,437**
2014	818	0	179	417	**1,414**
2015	756	0	109	330	**1,195**
2016	631	0	51	346	**1,028**
2017	675	0	50	448	**1,173**

Area disturbed means annual land used in each reported year for mining or for mining infrastructure (e.g., roads, shops, crushing equipment, conveyors). In Brazil, the area disturbed increased in 2017 due to additional clearing necessary for long-term infrastructure associated with the expansion of our Juruti mine. In Australia, the small increase in 2017 was due to slightly higher clearing for active mine areas at both the Huntly and Willowdale mines.

Area Rehabilitated

Hectares

	Australia	Europe/ Africa	North America	South America	**Total**
2013	796	0	111	233	**1,140**
2014	576	0	166	266	**1,008**
2015	550	0	179	564	**1,293**
2016	290	0	114	242	**646**
2017	412	0	110	486	**1,008**

Area rehabilitated means annual land returned to natural conditions or to productive use (such as farming) after mining or decommissioning of mine infrastructure in each reported year. The reduction in area rehabilitated in 2016 was mainly due to a range of operational constraints at the Huntly mine in Australia and reduced areas returned to the government of Suriname during 2016.

Rehabilitation Approach

The material excavated in our mining operations is typically made up of several layers that include topsoil (surface soil), overburden and bauxite ore or coal. The topsoil is an important resource, as it contains seeds, valuable nutrient reserves

and microbes that are essential for successfully establishing a sustainable vegetation cover after mining. Selective placement of overburden is also important for the effective reestablishment of native vegetation.

We generally return overburden and any rock to the mine pits. Wherever possible, we relocate any removed topsoil and overburden to pits that recently have been filled or landscaped—a process called progressive rehabilitation. In some situations, it is not possible or practical to immediately return all of the topsoil or overburden to a mine pit. In these cases, we store the materials in stockpiles for future use in rehabilitation.

In certain locations, naturally occurring sulfide minerals contained in overburden have the potential to release low pH (acidic) water when exposed to air, resulting in elevated salinity and dissolved metal concentrations in surface water and groundwater. Some clay overburden materials exhibit these characteristics, and we manage this material to prevent the potential release of acid and metals by selective handling, which may include encapsulation or sub-aqueous (underwater) placement.

Because biodiversity conservation is a major focus of our rehabilitation process, it is always a major component of any future land-use decisions or rehabilitation plans. To determine the biodiversity of our rehabilitated land, we routinely monitor tree establishment and growth, understory density and other parameters to determine the composition and health of the vegetation. We also conduct periodic fauna re-colonization surveys, targeted studies of rare or threatened fauna species, and surface water and groundwater studies where applicable.

We apply many strategies to optimize the number of plant species we reestablish in rehabilitated areas. In addition to returning fresh topsoil, we spread collected and specially treated seeds and plant nursery-grown seedlings. We may use cuttings and tissue culture propagation techniques for species that generally do not produce viable seeds.

At our bauxite mines in the jarrah forest of Western Australia, we also use removed tree trunks and stumps to construct fauna habitats in mining pits. While we previously placed a pile of three to five pieces of wood on each hectare of land, we now augment these log piles with specially selected single logs. Research has indicated that recolonization by some reptiles is enhanced with this single-log approach.

We continued developing remote sensing techniques to assess newly established rehabilitation and measure the progress of restoration efforts at our mines in Western Australia. These techniques include high-resolution light detection and ranging (LiDAR), which is a remote sensing method that uses light in the form of a pulsed laser to measure ranges, and multi-spectral cloud point data collected using both fixed wing aircraft and smaller unmanned aerial vehicles. Both are promising to provide cost-effective yet comprehensive information about our rehabilitation over large areas. We are using the data to assess rehabilitation relative to agreed-upon standards or completion criteria.

Unmanned aerial vehicle

Our Western Australia mines are also conducting field trials on cost-effective techniques to reestablish an important jarrah tree species as part of our rehabilitation process. Known as snottygobble (Persoonia longifolia), this species historically has been grown under nursery conditions and manually planted as a seedling. Shallow burial of specially treated seeds is offering a new way to increase the species' numbers in rehabilitation without increasing costs.

Our Juruti mine in Brazil is recognized globally for its innovative nucleation rehabilitation technique, which results in a more rapid and effective restoration of disturbed areas. The technique relies on locally adapted plants and animals colonizing micro-environments, which are created by placing

Nucleation technique

topsoil in mounds to create an undulating topography. This traps rainfall and controls runoff in an area that sees an average of more than 300 millimeters (12 inches) of rain during each of the wet season months of January through May. Other aspects of nucleation include managing organic residue, such as tree stumps and brush piles, and creating specific shelter areas for wildlife and birds.

Impact on Indigenous Peoples and Traditional Populations

Our locations with the most direct impact on indigenous peoples and traditional populations are our Juruti mine in Brazil and our former mining operations in Suriname.

We have engaged with the traditional community of Juruti Velho, located at Vila Muirapinima, since the inception of the mine, which is located in the Amazon. Juruti Velho has a population of approximately 9,900 people (21% of the overall municipality of Juruti) and encompasses 56 settlements located near where we started mining bauxite ore in 2009.

Since 2008, Alcoa, the National Institute of Colonization and Agrarian Reform (INCRA) and the Association of Communities of the Juruti Velho Region (ACORJUVE) have established a negotiation process on land use for mining and community. The Brazilian federal and state governments also have participated in the negotiations.

ACORJUVE is the formal organization that represents the Juruti Velho community, including landowner rights. From mine startup in October 2009 through December 2017, we paid US$17.7 million in royalties to ACORJUVE.

A comprehensive study to evaluate compensation for loss and damages was completed in late 2014. Since the results were not binding, we continued to negotiate with ACORJUVE, INCRA and the district attorneys throughout 2017 on the value of the compensation.

In Suriname, we ceased all mining activities in 2015 and have been working with the government of Suriname on an integrated closure agreement that includes a comprehensive mine rehabilitation plan. As part of that effort, we are now working to identify viable land use options for six disturbed mine sites in the Marowijne District concession area. Most of the villages located in the area consist of Maroons from the Cottica Ndyuka tribe.

We will continue engaging with the government and stakeholders in the Marowijne District in 2018 to determine the most viable land-use options for the six mine sites.

Case Study

Return of the Native Species

After using native grass for mine rehabilitation in the altitude fields (mountainous area) of the Poços de Caldas plateau in Brazil, a multi-year Alcoa research project has found that the rehabilitated areas are similar to native regions for vegetation cover and retain more soil due to better drainage.

Aristida sp. grass in a rehabilitated area

We began using *Aristida sp.* grass, the predominant native species in the altitude fields, for mine rehabilitation beginning in 2009. In the years following, we initiated studies of the rehabilitated areas and new methodology, concluding with an in-depth, two-year research project that ended in 2017.

During the project, researchers evaluated vegetation density and size and ecological succession (new species appearing). They also analyzed the physical and chemical attributes of the soil, such as density, porosity and the presence of nutrients and organic matter.

The studies verified that in the rehabilitated areas where we planted the native grass, the vegetation and soil were very similar to the native area. The one difference was in surface runoff of sediments, with the rehabilitated area experiencing fewer soil-loss events.

“This research is extremely valuable and is pioneering work in the area of altitude fields,” said Dr. Romero Carneiro, professor at Brazil’s Federal University of Alfenas. “It considers essential technical aspects of the environment in the rehabilitation process, enabling the sustainability of mining activity.”

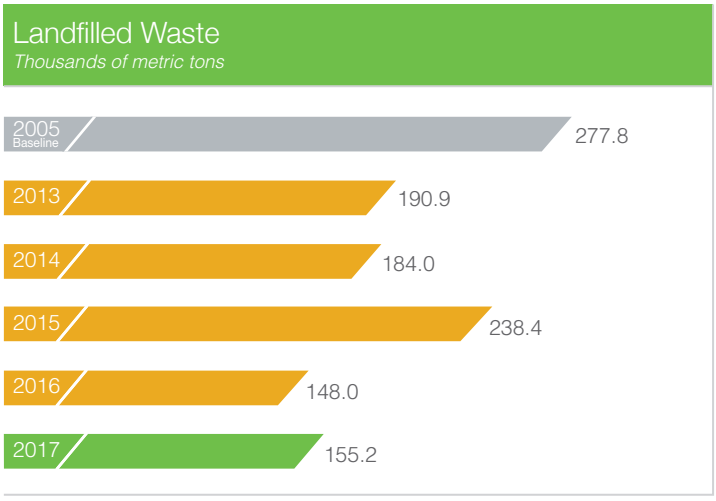
Waste

We closely manage the waste that we generate. We first look to eliminate waste at its source and then find alternative uses for whatever remains. Challenges exist, but we are committed to developing and pursuing technologies and processes that continue to shrink our waste footprint.

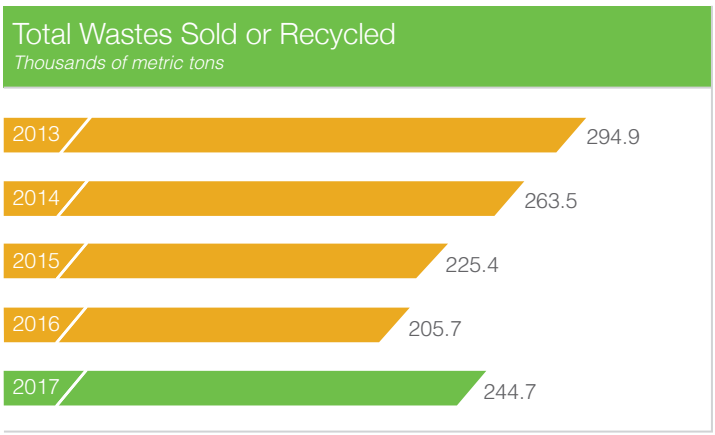
Landfilled Waste

Our strategic long-term target for waste in 2017 was a 75 percent reduction in landfilled waste by 2020 and 100 percent by 2030 from a 2005 baseline. This goal excluded certain waste streams, such as bauxite residue and fly ash, since these would mask our progress on reducing landfilled waste. Overburden and rock generated from our mining activities are also not included since both materials are reused in mine rehabilitation and are not considered waste.

Our landfilled waste increased 4.9 percent in 2017, primarily due to the planned partial restart of the smelter and other



Data changes from prior reporting are due to using real versus previously estimated data.



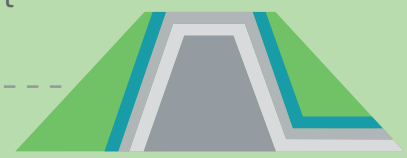
Data changes from prior reporting are due to using real versus previously estimated data.

2017 at a Glance

4.9% increase in landfilled waste

19.0% increase in wastes sold or recycled

2.0% improvement in bauxite residue storage efficiency



maintenance activities at our Warrick Operations in the United States. Since 2005, we have achieved a 44.1 percent reduction in landfilled waste.

Bauxite Residue

Generated during the alumina refining process, bauxite residue consists of coarse sand and mud, along with some residual caustic soda. It is stored in impoundments called residue storage areas that are closed and re-vegetated when full. In 2017, we generated 22.8 million metric tons of this residue.

Our 2017 strategic targets for bauxite residue focused on reducing the overall footprint associated with our management of the material:

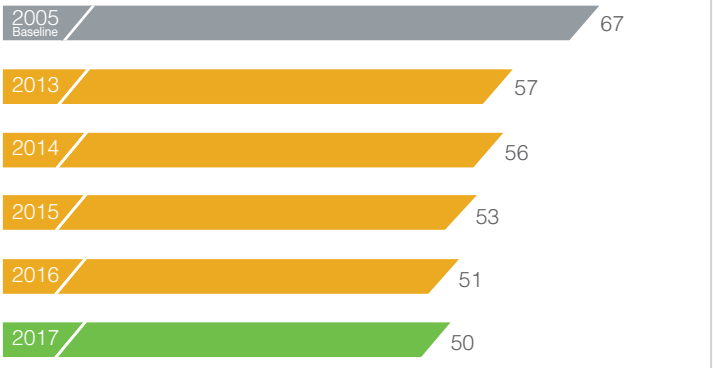
- From a 2005 baseline, reduce bauxite residue land requirements per metric ton of alumina produced (to improve bauxite storage efficiency) by 15 percent by 2020; 30 percent by 2030;
- Rehabilitate 30 percent of total bauxite residue storage area by 2020; 40 percent by 2030; and
- Recycle or reuse 15 percent of bauxite residue generated by 2020; 30 percent by 2030.

We continued improving our bauxite residue storage efficiency in 2017 after meeting our 2020 goal in 2013—seven years ahead of schedule. Our rehabilitation rate remained steady, but challenges remained in meeting our residue recycle/reuse goal.

For 2018 and beyond, we have established a new goal for bauxite residue that addresses our biggest challenge—reduce bauxite residue land requirements per metric ton of alumina produced by 15 percent by 2030 from a 2015 baseline.

Bauxite Residue Storage Efficiency

Square meters of land required per thousand metric tons of alumina produced



Bauxite Residue Storage Area Rehabilitation Rate

Percent of total area rehabilitated

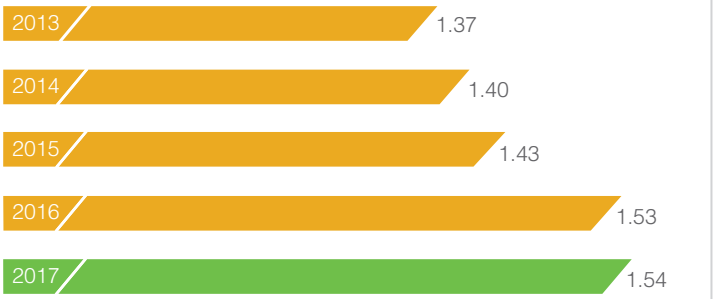
Bauxite Residue Recycled or Reused

Percent of total residue generated

Due to the high volume of residue produced each year, the percent recycled or reused is minimal.

Bauxite Residue Intensity

Metric tons per metric ton of alumina produced



The increase in 2016 and 2017 was due to a combination of the curtailing of refineries that had lower residue-to-alumina ratios and a drop in the bauxite quality used in some refineries.

Residue Filtration

In early 2016, we commissioned an innovative technology called residue filtration at our Kwinana refinery in Western Australia. With this technology, bauxite residue is forced through very large filters that squeeze the water from the mud. The water is then recycled in the refining process, reducing the refinery's freshwater use by 1.2 gigaliters (317 million gallons) annually.

This technology also allows us to stack residue within the existing footprint rather than spreading it to dry in the sun. The refinery will not need to construct another large residue storage area for at least 20 years, compared to every five years previously.

Dry stacking bauxite residue

In 2017, we approved a two-phase implementation of this technology at our Pinjarra refinery in Western Australia. The first phase will be commissioned in 2019 followed by the second phase in 2025.

The technology is expected to deliver benefits similar to the Kwinana facility, ultimately reducing freshwater use at the Pinjarra refinery by more than 2.5 gigaliters (660 million gallons) annually. It also will significantly delay the need for more than 400 hectares (988 acres) of new residue storage area. Based on current production predictions, the Pinjarra refinery will not need to construct a residue area within the 2045 planning horizon of the Huntly mine, which is the source of the refinery's bauxite.

We are currently evaluating this technology for our Poços de Caldas and Alumar refineries in Brazil and San Ciprián refinery in Spain.

Residue Management

We have globally mandated standards involving the construction, management and maintenance of our residue storage areas. An independent civil engineering professional also conducts an annual review of the areas to ensure they are maintained and operated to our specifically mandated standards. This is in addition to operating within local, regional and federal standards.

Another area of focus is improving how we close residue storage areas once they are full. While imported fill can be used to cap the areas, we look for more sustainable options. At locations where we generate coarse residue sand, we can transform this residue into a viable soil layer that can sustain a vegetative cover and initiate a more natural remediation. We are also working with other alumina producers through the International Aluminium Institute to investigate the possibility of transforming the finer residue mud into a viable cover material for rehabilitation.

Residue Reuse

Our efforts to reuse bauxite residue have been slower than we would like despite our advancements in modifying the residue—particularly decreasing its alkalinity—to enhance its prospects for reuse. One major impediment is that no regulatory framework exists to assess bauxite residue for reuse in many of the countries where we operate refineries. We are working with various government bodies to create such a framework so innovations in our research pipeline can be approved much faster.

Despite that challenge, we have developed a number of products made from bauxite residue.

Alkaloam®, which is a fine-grained bauxite residue that is carbonated through a reaction with carbon dioxide, increases the pH of acidic soils almost instantly compared to years for agricultural lime. A similar product is alkaline clay, which has been used to treat the acidic overburden material left after coal mining. Our ReadyGrit™ is a red-colored, sand-sized material that can be used for general fill, construction backfill, turf top dressing, bunker sand for golf courses and road base construction. Bauxite residue is also used in the innovative Natural Engineered Wastewater Treatment (NEWT™) system developed by Alcoa Inc.

We continue to collaborate with external organizations and universities on residue reuse opportunities. Through Alcoa Foundation, for example, we are supporting research at three universities that is focused on using bauxite residue in the manufacture of cement, helping reduce that industry's greenhouse gas emissions and use of non-renewable raw materials. Results to date have shown that it is feasible to replace up to 20 percent of pure cement with bauxite residue.

Spent Pot Lining

Spent pot lining is the carbon and refractory lining of smelting pots that have reached the end of their serviceable life.

Our approach to managing spent pot lining is to first minimize the volume we generate by using technology and processes to reduce pot failures and increase the lifespan of a smelting pot. Both result in fewer pots that need to have their lining removed and replaced.

We have been a leader in finding ways to transform our spent pot lining into a raw material or fuel source for other industries. For example, the cement industry uses spent pot lining as both a fuel and raw material. It is also a raw material used in the production of steel and a fuel source in the manufacture of rockwool insulation.

We recycle and/or reuse SPL in accordance with applicable country-specific requirements.

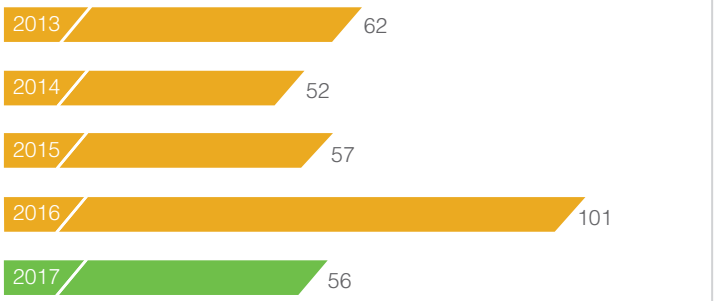
Spent Pot Lining Intensity

Kilograms per metric ton of aluminum produced

Intensity rates do not include demolition tonnage from permanently closed smelters. The increase in 2015 was due to less production as a result of smelter curtailments. The decrease in 2016 was the result of production curtailments and closures at several locations and the associated decrease in pot-rebuilding activities. The increase in 2017 was due to normal pot-building schedules.

Spent Pot Lining Recycled/Reused

Percent of spent pot lining generated



Decreased recycling in 2014 was due to weakness in the cement industry and/or significant one-time remediation tonnage resulting from the permanent closure of several smelters for which recycling capacity was not available. Increased recycling in 2016 was the result of a focused effort to decrease the amount of spent pot lining in storage at several locations. Decrease in 2017 was primarily the result of reduced recycling of stored SPL inventory.

Coproducts and Byproducts Reuse

In addition to bauxite residue and spent pot lining, we are actively seeking alternative uses for our other coproducts and byproducts to avoid their disposal. Our new long-term goal is to optimize our portfolio of economically viable placement opportunities for byproduct materials (from waste to value) by 2020 and define specific objectives to be achieved by 2025 and 2030.

We use a three-tiered classification for our coproducts and byproducts:

- Commercial: Materials sold as a commercial product;
- Transition: Materials that have some limited commercial viability or can be placed with a user to derive a better financial outcome than landfilling; and
- Disposal: Materials that are typically landfilled or paid to dispose.

Our secondary minerals team sold 108,000 metric tons of products that we made available for sale in 2017, generating US$13 million in margin.

Sample Coproducts and Byproducts

Product	Reuse
Commercial	
Aluminum trihydrate	Filler; flame retardant; water treatment; catalyst and feedstock for specialty chemical applications; raw material alternative for the cement industry; additive used in waste treatment and stabilization
Beneficated alumina-rich plant floor sweepings	Ceramic tile; raw material alternative for the cement industry where alkali level can be tolerated in cement chemistry; other alumina product enrichment
Carbon briquettes	Anthracite replacement and slag conditioning for the steel industry
Caustic liquor	Caustic and alumina source for alumina refineries; geopolymer applications
Fly ash and bottom ash	Raw material alternatives for the cement industry and/or geopolymer industry

Sample Coproducts and Byproducts

Product	Reuse
Commercial	
Spent anodes	New anode production for aluminum smelting; fuel source to replace raw or calcined coke; carbon monoxide production; carburization of steel; hardening of steel; raw material for other miscellaneous industries
Transition	
Alumina brick	Raw material alternative for the cement industry; briquette component for aluminum/oxygen removal in the steel industry; fill material; other alumina enrichment
Alumina-rich pot screenings	Raw material alternative for the cement industry where alkali level can be tolerated in cement chemistry
Bauxite residue	Neutralizer for acid soil; construction fill; road base material; wastewater treatment material
Carbon fines	Fuel source for the cement industry; anthracite replacement for the steel industry; briquette component for high-yield anthracite replacement in the steel industry
Cover bath	Supplement to pure bath used in the smelting process in the aluminum industry
Cryolite-rich pot screenings	Supplement to cryolite used in the smelting process in the aluminum industry; slag conditioner for the steel industry
Distressed coke	Fuel source for the cement industry; anthracite replacement for the steel industry; briquette component for high-yield anthracite replacement in the steel industry
Disposal	
Alumina-rich underpot material	Raw material alternative for the cement industry where alkali level can be tolerated in cement chemistry
Carbon dust	Fuel source for the cement industry; anthracite replacement for the steel industry; briquette component for high-yield anthracite replacement in the steel industry
Carbon plant floor sweepings	Fuel source for the cement industry; anthracite replacement for the steel industry; briquette component for high-yield anthracite replacement in the steel industry
Contaminated alumina-rich plant floor sweepings	Raw material alternative for the cement industry where alkali level can be tolerated in cement chemistry
Cryolite-rich plant floor sweepings	Flux to dissolve oxide minerals in the steel industry
Cryolite-rich underpot material	Flux to dissolve oxide minerals in the steel industry
First-cut spent pot lining	Fuel source and raw material for cement, steel, rockwool and other industries
Graphite blocks	Slag conditioner for the steel industry; electrical industry specialty products; secondary market for graphite
Second-cut spent pot lining	Silica and alumina raw material alternative for the cement industry

Water

Our facilities throughout the world rely on a sustainable supply of water.

The largest users of water within our operations are our refineries and, to a lesser extent, our casthouses. In some countries, such as Canada, Iceland, Norway and the United States, water is plentiful and a source of power for certain of our smelters. The situation is markedly different for our operations in Western Australia, where the drying climate is a challenge. In Brazil, we manage our water use to account for high seasonal variation in rainfall.

Despite these regional imbalances, our global goal in 2017 was to reduce our average freshwater intensity by 25 percent by 2020 and 30 percent by 2030 from a 2005 baseline. Our intensity during the year was 11.1 percent lower than the baseline and 3.0 percent higher than 2016. Factors behind the latter performance are primarily related to smelter restart activities and water-system maintenance.

Beginning in 2018, our new strategic long-term goal is to define and implement a program focused on enhancing water-use efficiency at locations in water-scarce areas by 2020 and define specific water-use reduction targets for 2025 and 2030. The first step in achieving this goal will be updating our global water-risk survey, which will occur in late 2018. This survey will identify the regions of the world where we operate that are water-stressed, allowing us to develop roadmaps to help our locations in those regions enhance their water-use efficiency and make them more tolerant to drought.

We encourage all of our locations, even those in water-rich areas, to look for ways to reduce consumption and discharge, use secondary sources of water, and increase recycling and other opportunities through advanced technologies and process improvements.

Our Kwinana refinery in Western Australia, for example, has reduced its freshwater use by 1.2 gigaliters (317 million gallons) annually through an innovative technology called residue filtration. (See the Waste section.) At our Intalco smelter in the United States, engineers developed a low-cost solution that eliminated water usage from the facility's anode-cooling operation.

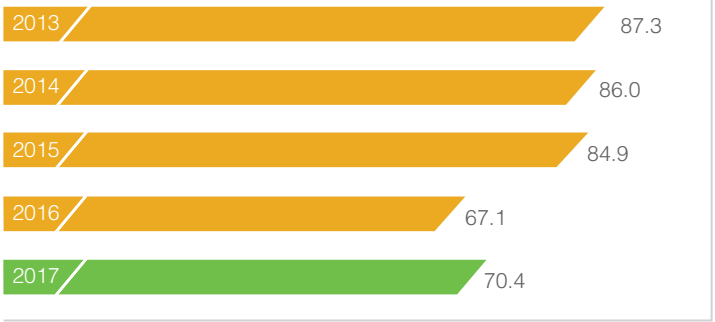
2017 at a Glance

3.0% increase in freshwater-use intensity

70.4 million cubic meters of freshwater consumed

Freshwater Use

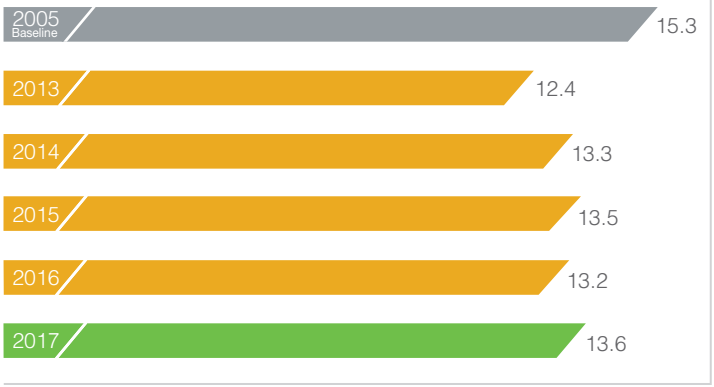
Millions of cubic meters



Rainwater not included.

Freshwater-use Intensity

Cubic meters of water per metric ton of primary aluminum produced



Rainwater not included. Data changes from prior reporting are due to updates to the database, including removing data for sold locations. Large volume, once-through water usage from our energy facilities is excluded from the intensity metric, which reflects only freshwater used to directly manufacture products. The amount represents the combined impact of refining, smelting, casting and rolling operations indexed to metric tons of primary aluminum production (refining is included at a ratio of 1.9 metric tons of alumina to 1.0 metric tons of smelted aluminum).

2017 Freshwater Withdrawal by Source

Source	Millions of Cubic Meters
Surface Water	46.4
Rainwater	27.4
Groundwater	20.4
Municipal Water	3.2
Wastewater	0.4
Total	**97.8**

Data estimated based on water balance information and prior water surveys.

Case Study

Cool Idea Eliminates Water Use

A simple and cost-effective change in how carbon anodes are cooled at our Intalco Works in the United States reduced freshwater use by 151 cubic meters (40,000 gallons) each day.

Anodes manufactured onsite for use in the smelting pots previously were cooled with water pumped through low-flow spray nozzles. The plant filtered the used water to remove larger particles before discharging it into a local body of water.

Tightening water discharge regulations spurred the plant to explore water treatment options to remove the remaining solids and other materials from the anode-cooling wastewater. Solutions ranged from US$150,000 to US$2 million.

In 2017, the plant's engineering team began exploring more cost-effective and environmentally friendly options. Engaging researchers at the Alcoa Technical Center, the team learned that Intalco's unique anode manufacturing process resulted in internal anode temperatures that did not cause the binding material—pitch—to soften like it does in other processes. This allowed the newly manufactured anode to maintain its structural integrity right out of the press, eliminating the water-cooling step.

Intalco now cools anodes through ambient air temperature and industrial-sized fans. Zero anodes have cracked since implementation of the new process, which cost less than US$10,000.

Water-free anode cooling

Emissions

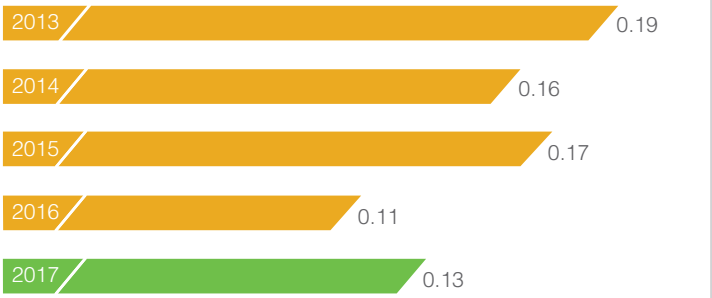
The manufacturing process used at an Alcoa location determines the types of air emissions.

Most greenhouse gas, sulfur dioxide and fluoride emissions are from our smelting operations, while our refineries account for the majority of our mercury emissions. (See the Climate Protection section for a discussion on greenhouse gases.)

We continue to work with each business unit to cost-effectively reduce these emissions, especially where global headwinds are guiding us to expedite actions necessary to reduce our environmental impacts.

Mercury Emissions Intensity

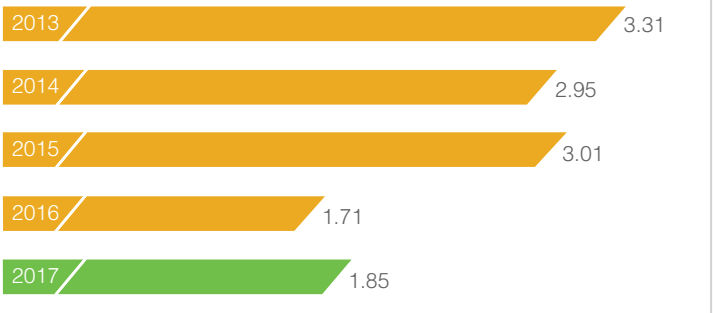
Grams per thousand metric tons of alumina produced



Data changes from prior reporting are due to the replacement of estimated data with actual measured results. The increase in mercury intensity in 2017 is the result of higher levels of naturally occurring mercury within the bauxite and process upsets at a refinery.

Mercury Emissions

Thousands of kilograms



Data changes from prior reporting are due to the replacement of estimated data with actual measured results.

2017 at a Glance

8.2% increase in mercury emissions

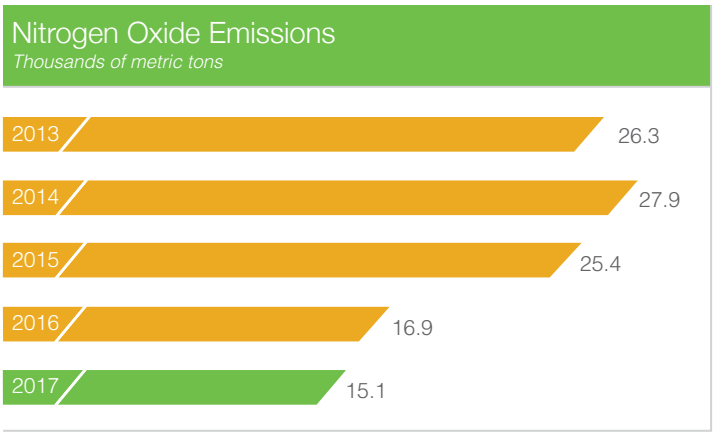
EMISSIONS

6.7% decline in fluoride emissions intensity

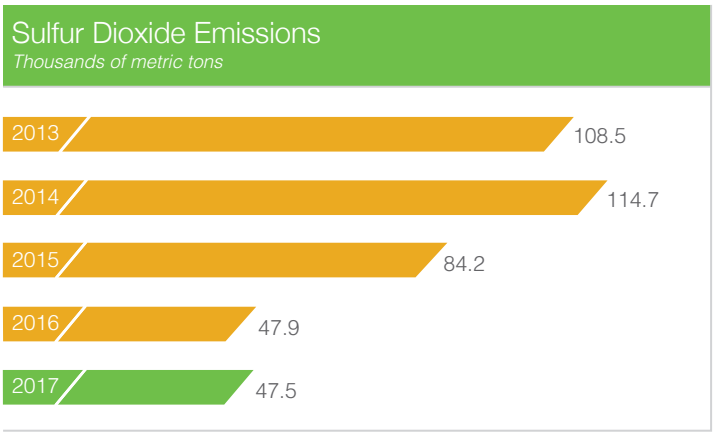
Fluoride Emissions Intensity

Kilograms per metric ton of primary aluminum produced

Data changes from prior reporting are due to the replacement of estimated data with actual measured results.



Data changes from prior reporting are due to the correction of data resulting from an internal review. The significant decline in 2016 was due to facility curtailments.



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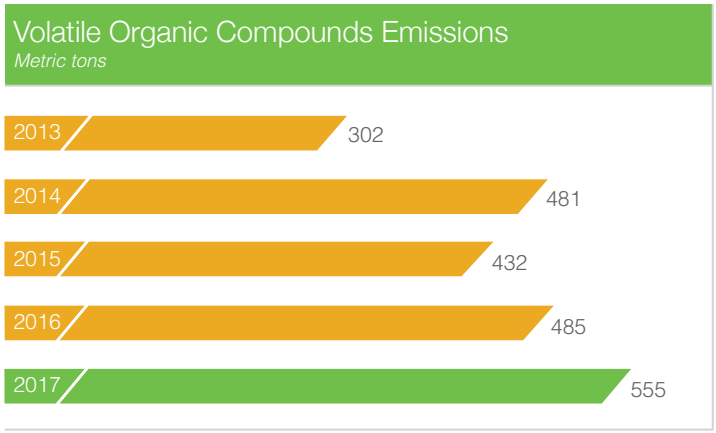


The increases in 2016 and 2017 were due to additional production of rolled aluminum products within permitted emission levels.

Ozone-depleting Substances

We use halon gas as a fire suppressant in several locations throughout the world, and we are phasing out these remaining systems as they expire or are used.

Fugitive Emissions

Fugitive emissions, such as dust, are generally defined as those that are not emitted or released from a chimney, stack or vent.

Controls we use to manage or minimize fugitive emissions from our mining and process operations include:

- Watering haul roads, storage piles and bauxite residue areas to minimize windblown dust;
- Weather forecasts to help guide additional control decision-making during periods of unfavorable weather conditions; and
- Capture and control systems for loading/unloading, material handling, aluminum reduction and other process operations.

We frequently employ visual-emission observation and ambient-air monitoring as tools to verify the effectiveness of these controls.

Related Information

Climate Protection

Concerted Effort Reduces Fluoride Emissions

The Alcoa Fjardaál smelter in Iceland has overcome process challenges and a natural phenomenon to minimize fluoride emissions, keeping them well below required levels to avoid impact to surrounding vegetation.

In 2017, Alcoa Fjardaál achieved its lowest fluoride emission intensity ever. In addition, fluoride in the grass surrounding the smelter was 21.9 micrograms per gram (ug/g)—45 percent below the monitoring-plan limit.

“I have been very happy with Fjardaál’s cooperation on this sensitive matter, and I can see that the work the company has done is delivering good results,” said Sigurdur Baldursson, a sheep farmer who operates near the facility.

Five years earlier, the site was in a different situation. Ongoing monitoring in 2012 found that fluoride in the grass had reached 52 ug/g, exceeding the 40 ug/g limit of the grass-monitoring plan. A gas treatment center had malfunctioned, and the situation was exacerbated by heat conversion, which is a natural phenomenon where air circulates within the fjord during certain weather conditions.

The technical issues were promptly addressed, and routine monitoring in late 2013 found that the fluoride levels were within the acceptable limit but worse than the site’s goal. The facility formed a special fluoride committee, conducted rapid improvement events, installed new equipment, increased monitoring and did additional education with operators.

“When the incident occurred in 2012, there wasn’t a lot of knowledge on how to deal with it,” said Mr. Baldursson. “The Fjardaál team got help from a specialist in the field, and that made all the difference. I feel that matters related to fluoride are being handled professionally, and the Fjardaál team is on top of these things now.”

The smelter conducted public and private meetings with affected stakeholders and provided monitoring results, including answering questions about fluoride’s impact on human and animal health and local crops.

Dr. Alan Davison, who spent his career researching fluoride, attended a community meeting, appeared on the local news and wrote a brochure distributed to every area household. The smelter also brought in a specially trained veterinarian to educate farmers and examine the area’s animals. None was impacted.

Emissions monitoring station

Facility Stewardship and Transformation

Our approach to asset management covers the entire life cycle of a facility, including ongoing stewardship and end-of-life transformation.

Our long-term goal is to develop a management plan for every location. Seventeen of our locations, some of which already have been closed, had developed such a plan by the end of 2017.

We spent US$118 million on stewardship and transformation projects at more than 45 locations around the world in 2017. Many were at locations that are no longer operational but were once operated by us or a predecessor. The remaining projects were at operating facilities or facilities that were sold but we retained the environmental liability.

2017 Transformation Spend

Millions of U.S. dollars

Activity	Spend
Environmental Remediation	48
Demolition at Closed Locations	30
Mine Reclamation	19
Closure of Bauxite Residue Areas at Closed Locations	14
Spent Pot Lining Disposal at Closed Locations	6
Landfill Closure	1
Total	**118**

Includes reserve and expense spend.

Alcoa Foundation plays an important role in our facility transformation, providing funding to local non-governmental organizations to help impacted communities. In 2017, the foundation invested US$733,000 in projects focused on education and community enhancements in Suriname and the United States.

Remediation Approach

As science and technology advance, we adapt our manufacturing practices to minimize their impact on the environment. However, some of our historical operating practices, which were legal and acceptable in their time, require attention today. We are committed to remediating the sites that employed such practices so they can be repurposed to benefit the local community.

The primary objective of any remediation project is the protection of human health and the environment. As part of this, we must first collect sufficient information using sound scientific assessments to understand the nature of the environmental condition. We also work to identify remedial solutions that are protective, feasible and compatible with current or likely future use of the facility. This requires us to address the often-challenging objective of balancing multiple needs, desires and expectations within Alcoa, the community and regulatory authorities while keeping good science and constructability as key drivers in selecting a remedial approach.

2017 at a Glance

US$118 million spent on facility stewardship and transformation projects at 45-plus locations

US$733,000 invested by Alcoa Foundation in communities impacted by facility transformation

Closed Facilities

Whenever we close a facility, we work closely with relevant stakeholders to develop a transformation strategy with a goal of reuse or redevelopment.

Some facilities can be repurposed with few changes. Others may require remediation, major modification or even demolition before the site can be reused.

A major focus of our work in 2017 continued to be decommissioning and remediating the 575-hectare (1,421-acre) Point Henry complex in Victoria, Australia, which closed in 2014. We worked with the community and other stakeholders to craft the Point Henry 575 Concept Master Plan, which was released in September 2017. The plan envisions a mixed-use redevelopment with numerous types of residential, commercial and recreational subdivisions.

We completed approximately 60% of the site's demolition in 2017 and expect to have all demolition completed in 2018.

We also completed studies that are needed to identify and define potential environmental issues, and we plan to submit our final remediation plans in 2018.

Another major program in 2017 was the decommissioning of our former coal mine and reclamation of our 150-megawatt coal-fired power station in Anglesea, Australia, which closed in 2015. We completed approximately 90% of the asbestos abatement and 30% of the demolition work and expect to have all demolition competed in 2018. We hope to have our proposed mine rehabilitation and closure plan approved by the authorities in 2018.

During 2017, the Victorian Department of Environment, Land, Water and Planning (DELWP) harvested winter water flows

Case Study

Early Return of Land Expands Park, Tourism Opportunities

In December 2017, the Great Otway National Park in Anglesea, Australia, expanded by 6,510 hectares (16,087 acres) with our early surrender of pristine leased land. The opportunity for the area to become a year-round tourist destination increased as well.

Since 1961, we had been leasing around 18,000 acres (7,300 hectares) of Crown land in the state of Victoria for our Anglesea coal mine and power station, both of which were closed in 2015. Our operations never used the land, which we returned 44 years before the lease's expiration in 2061.

The land, which consists of low-growing woody vegetation, comprises the Anglesea Heath. This environmentally important heath is home to approximately 25 percent of Victoria's plant species and has become a unique haven for native flora and fauna. These include:

- The powerful owl, crimson rosella (parrot), rufous bristlebird, New Holland mouse, swamp antechinus (marsupial) and swamp skink;
- More than 100 species of orchid, making it one of the most orchid-rich sites in Australia; and
- Eight species of flora that are rare or threatened at the national level and 20 species that are rare or threatened at the state level.

"The Anglesea Heath is an incredibly important addition to the Great Otway National Park and will benefit the local community for generations to come," said Lily D'Ambrosio, Victoria's Minister for Energy, Environment and Climate Change. "The addition of Anglesea Heath would not have been possible without the cooperation of Alcoa."

The expansion of the national park will support the area's aspiration to transition from a summer coastal tourist destination to a year-round one, increasing opportunities for the area's businesses and people seeking employment.

We continue to lease nearly 787 hectares (1,945 acres) of Crown land while remediating and decommissioning the coal mine and power station sites. We have embedded community consultation in this process.

While this land will not be incorporated into the national park, its future and that of Alcoa's adjacent freehold landholdings are being considered as part of a broader land use plan that proposes public and commercial uses.

Anglesea Heath

from the Anglesea River and stored the water in one of our Anglesea site's former ash ponds. DELWP distributed this water as needed over the summer to maintain the river's flow in order to mitigate impacts from naturally occurring acid soil within the adjacent national park.

Another major development for the Anglesea site was returning 6,510 hectares (16,087 acres) of Crown land 44 years before our lease expired. This pristine land was added to the Great Otway National Park in December 2017.

In Suriname, we continued discussions with the federal government regarding the creation of a potential industrial park that would use the infrastructure, port and utilities from our closed Suralco alumina refinery. Many of the initial potential tenants would process Suriname's resources, such as timber, into higher-value products, helping create jobs and a tax base in the area.

In 2017, we completed final grading and remediation of our closed smelter in Frederick, Maryland, USA. The location, which totals 890 hectares (2,200 acres), is now shovel-ready for redevelopment. It includes numerous zoning designations and is being marketed for sale and redevelopment.

At our closed Massena East smelter in New York, USA, we removed the smelting equipment from the six potrooms. We also worked with the St. Lawrence Regional Development Authority and the New York Power Authority to help market the site to potential businesses. In November 2017, a data management firm that will bring up to 150 technical jobs to the area signed a long-term lease and will use our former smelting buildings and electrical infrastructure.

In December 2017, we signed an agreement to transfer our closed Portovesme smelter to Invitalia, an economic development arm of the Italian government. However, we have retained the environmental obligations associated with the site. This transfer enables the government's efforts to find a buyer to restart the operation. Our environmental responsibility may be reduced upon Invitalia achieving certain milestones related to the future of the smelter.

At both the Portovesme and Fusina, Italy, sites, we completed our work to define the remediation plans to prepare the sites for redevelopment. We began the soil remediation program at both locations in 2017 and expect to be completed in 2019.

At the Fusina and Poços de Caldas, Brazil, locations, we continued demolishing the closed smelters.

Operating Facilities

In Baie Comeau, Canada, we completed remediation of the Anse du Moulin Bay during 2017. We removed and capped 56,000 cubic meters (73,245 cubic yards) of sediment containing polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) discharged from historical operations of our nearby smelter. We placed the sediments in containment cells that will create an additional work and storage area for the bay's port facility.

Anse du Moulin Bay

In a similar project in Norway, we removed approximately 30,000 cubic meters (39,240 cubic yards) of PAH-containing sediment from the Mosjøen Harbor through dredging, placing the material in sealed coffer dams and capping the seafloor with clean fill. The project enabled the extension of a wharf jointly shared by the municipality and Alcoa. The contamination was due to historical operations at our Mosjøen smelter.

At our idled refinery in Point Comfort, Texas, USA, we dredged and excavated more than 305,000 cubic meters (400,000 cubic yards) of mercury-contaminated sediments within the adjacent ship channel and along the shoreline. Removing these residual source materials is expected to result in lower levels of mercury in the ecological habitat.

During 2017, we conducted investigations and remedial design engineering to scope major remediation projects that will occur at our Massena West (New York) and Lake Charles (Louisiana) facilities in the United States in 2018.

Retained Liabilities

At facilities that we no longer owned but retained remediation liabilities, we continued to remove residual contaminated soil, treat groundwater, maintain closed landfill covers, and monitor surface water and groundwater systems.

At closed bauxite residue disposal areas in St. Croix, U.S. Virgin Islands, and the U.S. state of Illinois, we continued to maintain storm water conveyance channels, monitor and maintain the vegetative cover, and repair access roads and other erosion-impacted features to ensure the remedy cover remains compliant with requirements.

At several other locations throughout the United States and in St. Croix, we continued to monitor groundwater systems to assess natural attenuation of contaminant plumes. We provide periodic reports to governmental agencies on our progress toward eventual closeout.

Sustainable Land Use

For our large land holdings, some of which provide a buffer for our operations and others that contain reserves that will be extracted over time, we seek and support sustainable uses.

Farming

We lease 6,032 hectares (14,905 acres) of our land at eight locations for farming. At our closed Frederick location, for example, we have leased 434 hectares (1,072 acres) of land to the same farming family for more than 14 years for corn and other crops. Other farming operations produce apples, cherries, corn, hay and soybeans.

In Addy, Washington, USA, we grow alfalfa that the Washington Department of Fish and Wildlife harvests for the winter feeding of 7,000 elk and 200 bighorn sheep. We have grown and donated more than 900 metric tons of alfalfa annually since 2008.

Livestock

At our Warrick, Indiana, USA, location, an independent farmer maintains a herd of 350 cattle. A small herd of cattle is also kept at our location in Blount County, Tennessee, USA.

Case Study

Turning a Liability into Opportunities

A unique solution to remediate sediment in Mosjøen Harbor in Norway also improved commercial shipping opportunities by creating a deeper harbor and expanded wharf.

Historical operations at our Mosjøen smelter discharged water with PAHs into the nearby harbor. Today, we eliminate the PAHs through additional onsite treatment.

After acquiring the Mosjøen smelter, we took responsibility to develop a plan to remediate contaminated sediments on the seafloor. After gaining approval from myriad stakeholders, we removed approximately 30,000 cubic meters (39,240 cubic yards) of sediment and placed the material in sealed coffer dams. The seafloor was also capped with clean fill.

The coffer dams became the foundation upon which a wharf, jointly shared by the municipality and Alcoa, was expanded. The project extended the municipal side of the wharf by 5,100 square meters (1.3 acres), while the Alcoa side was upgraded and expanded by 1,080 square meters (0.27 acres). The expanded portions of the wharf will open in 2018.

The larger wharf and deeper harbor improve navigational safety and increase the size of ships that the local port can accommodate, providing new commercial opportunities for the area and its forestry industry. It also allows Alcoa to dock larger ships to service our Mosjøen smelter, reducing long-term operational costs.

Expanded Alcoa (right side) and municipal wharf

"This is an investment for the future, for Alcoa, for us, for the municipality and not least for the forestry industry," said Kurt Jessen Johansson, Mosjøen Harbor manager. "A major wharf is vital for establishing Mosjøen as a logistics hub in the Helgeland region."

Mark Johnson
Manager
City of Alcoa, Tennessee

"Alcoa's smelting operations was the namesake and center of our community for almost 100 years. After permanently shutting down the facility, the company immediately began working with civic leaders to prepare the land to create a new employment and tax base. The site's size and available infrastructure is significant and attractive to many industries. Alcoa has been our partner in marketing the location, and I continue to be impressed with the company's skill, knowledge and dedication in making these redevelopment projects successful."

Mineral Mining

At some locations, we have other mineral resources in addition to the coal or smelter-quality bauxite for which the lands were obtained. We work with third-party consultants and miners to evaluate and sustainably mine these resources.

In Bauxite, Arkansas, USA, we have contracted with a company to mine hard rock for the construction and cement industries. Two other companies are mining bauxite resources primarily used to produce proppants for the hydraulic fracking process.

Water

At a number of locations, we hold significant water rights that benefit not only our operations but also the community. In Rockdale, Texas, USA, we provide water to a public water company that supplies communities near this closed location. Where we have dams, we proactively work to manage water and reservoir levels to enable recreation and fishing.

Environmental Compliance

Our operations must adhere to all applicable environmental laws and regulations wherever they are located and, in certain cases, our more stringent internal standards.

Our Compliance Committee comprises leaders from audit, ethics and compliance, legal, and environment, health and safety (EHS). It oversees EHS compliance-related matters to ensure that any non-conformance obtains the appropriate level of oversight, based on the risk level of the issue.

Our robust environmental compliance tracking system ensures we rapidly correct any actual or potential incident. We also use a review process to ensure that environmental permit applications, draft permits and final permits are effectively reviewed, commented on and submitted in accordance with regulatory requirements.

We encourage self-discovery and reporting of all deviations, no matter how small, so we can learn from the event and continuously improve our compliance management system.

In 2017, we began conducting risk-based EHS assessments in addition to full-scope audits. We conduct these assessments according to a multi-dimensional risk map, and each is customized to a location's current needs and challenges. The assessment team, which is composed of internal and/or external subject matter experts, works collaboratively with locations to review and address challenges.

We also actively engage in regulatory rulemaking at all levels of government. We accomplish this via regional aluminum associations and industry partnerships on common industry issues at the federal, provincial and country level, and through direct communication with state and local governments. Our objective is to work collaboratively with regulatory authorities so that the outcome of major rulemaking is not overly burdensome to industry.

As part of our regulatory development process, we monitor headwinds and qualitatively assess the costs of compliance. This process includes assessing the timeframe available to contribute to a regulatory development so we can appropriately engage stakeholders involved with the rulemaking process.

2017 at a Glance

0 major spills

$92 million in environmental capital expenditures

Spills

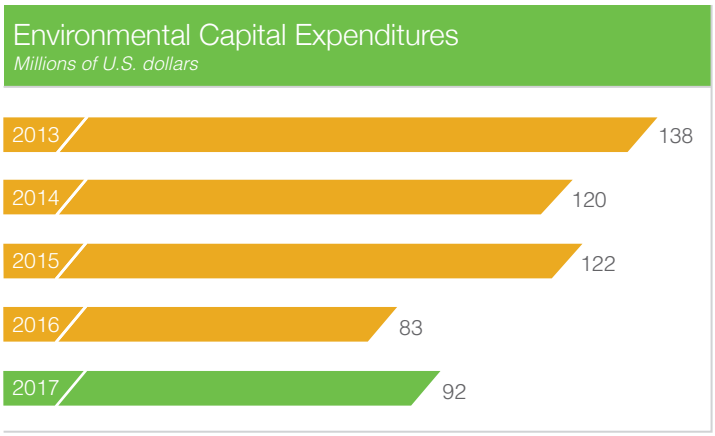
	Spills over 20 Liters	Major Spills
2013	315	0
2014	329	0
2015	330	1
2016	249	0
2017	235	0

We require any uncontained spill or release of oils, process liquids or solids in excess of 20 liters to be reported internally as an incident regardless of whether they are required to be reported to external agencies. Previously reported data reflected all spills (contained and uncontained), and we have updated the table to reflect only those events that were uncontained. We define major spills as those meeting the criteria for a major environmental incident designation in the Alcoa Environmental Incident Management System, which includes spills that have the potential to cause significant harm to the environment.

Environmental Capital Expenditures

Our annual capital expenditures for environmental purposes vary based on the number and type of projects implemented. In 2017, we invested US$92 million in capital projects primarily focused on improving bauxite residue management.

For any capital expenditure request exceeding US$2 million, including those not focused on environmental projects, members of our corporate environmental staff conduct a review to ensure that the work incorporates best practices and the final project will minimize additional environmental impact.



Appendix

2017 Awards

Global

Dow Jones Sustainability Indices World Index

Most Admired Metals Company in the World—Fortune Magazine

Australia

2017 Western Australia Landcare Award (best Australian government partnership for landcare category)—Australian Government
Swan Alcoa Landcare Program (partnership between Alcoa of Australia, Perth Natural Resource Management and the Department of Biodiversity, Conservation and Attractions)

Bronze Employer—Pride in Diversity Australian Workplace Equality Index
Alcoa of Australia

Brazil

Best Companies to Work for in Brazil (number 1 in metals sector)—VOCÊ S/A Magazine
Alcoa in Brazil

19th Excellence Award in the Brazilian Mining and Metal Industry—Minérios & Minerales Magazine
Juruti Mine

One of the 75 Most Sustainable Companies of the Year—Guia Exame de Sustentabilidade, da Editora Abril and Centro de Estudos de Sustentabilidade da Fundação Getulio Vargas
Alcoa in Brazil

Golden Seal in the GHG Inventory—GHG Protocol
Alcoa in Brazil

Proteção Brasil 2017 Award (gold award for occupational hygiene)—Revista Proteção 2017
Alumar Refinery, São Luís

Benchmarking Award (bauxite residue reduction project)—15º Benchmarking Brasil
Alumar Refinery, São Luís

Canada

One of the Best Employers in Canada (number 34)—Forbes Magazine
Alcoa in Canada

Iceland

2017 Icelandic Industry Educational Award—Icelandic Federation of Employers
Alcoa Fjardaál

Equal Pay Certification (first large company to receive)—Icelandic Ministry of Social Affairs and Equality
Alcoa Fjardaál

Spain

Road Safety Award—Institute of Occupational Health & Safety and the General Directorate for Traffic
Avilés Smelter

United States

Corporate Equality Index 2018 (perfect score)—Human Rights Campaign Foundation
Alcoa Corporation

2017 Straight for Equality in the Workplace Award—PFLAG
Alcoa Corporation

Drucker Institute Management Top 250 list (number 82)
Alcoa Corporation

2017 Top Workplace (number 9 in mid-sized companies category)—Pittsburgh Post-Gazette
Alcoa Global Headquarters and Principal Executive Office

Global Reporting Initiative Content Index

This index helps readers compare the information from our sustainability report, annual report and website with the Global Reporting Initiative GRI Standards.

This report has been prepared in accordance with the GRI Standards: Core option.

GRI 102 General Disclosures 2016

Disclosure	Description	Location
Organizational Profile		
102-1	Name of the organization	Alcoa Corporation
102-2	Activities, brands, products, and services	What We Do Value Creation Products Recycling
102-3	Location of headquarters	Pittsburgh, Pennsylvania, USA
102-4	Location of operations	Locations Corporate Overview
102-5	Ownership and legal form	Formed in 2016 under the laws of the State of Delaware, Alcoa Corporation is a publicly traded company listed on the New York Stock Exchange (NYSE: AA)
102-6	Markets served	What We Do
102-7	Scale of the organization	Annual Report Corporate Overview
102-8	Information on employees and other workers	Our People
102-9	Supply chain	Supply Chain
102-10	Significant changes to the organization and its supply chain	Annual Report Supply Chain
102-11	Precautionary Principle or approach	Alcoa supports the precautionary principle under the United Nations Global Compact. Consistent with that principle, we advocate a risk-based approach to our operations through our extensive management systems.
102-12	External initiatives	Reporting and Materiality
102-13	Membership of associations	Stakeholder and Community Engagement
Strategy		
102-14	Statement from senior decision-maker	From the CEO
102-15	Key impacts, risks, and opportunities	Risks, Opportunities and Challenges Sustainability Approach Value Creation Process Strategic Long-Term Goals Sustainable Development Goals
Ethics and Integrity		
102-16	Values, principles, standards, and norms of behavior	Alcoa Values Human Rights Policy Code of Conduct Business Conduct Policies Ethics and Compliance

GRI 102 General Disclosures 2016

Disclosure	Description	Location
102-17	Mechanisms for advice and concerns about ethics	Ethics and Compliance Integrity Line
Governance		
102-18	Governance structure	Board of Directors Board Committees
102-19	Delegating authority	Safety, Sustainability and Public Issues Committee Audit Committee
102-20	Executive-level responsibility for economic, environmental, and social topics	Alcoa's CEO, who reports to and is a member of the Board of Directors, has ultimate responsibility for economic, environmental and social topics. The chief financial officer is responsible for economic topics, and the vice presidents for sustainability and human resources have responsibility for environmental and social topics, respectively.
102-21	Consulting stakeholders on economic, environmental, and social topics	Safety, Sustainability and Public Issues Committee Stakeholder and Community Engagement
102-22	Composition of the highest governance body and its committees	Board of Directors Board Committees
102-23	Chair of the highest governance body	2018 Proxy Statement (page 11) The chairman of the board at the end of 2017 was Michael G. Morris.
102-24	Nominating and selecting the highest governance body	Governance and Nominating Committee 2018 Proxy Statement (pages 9-22)
102-25	Conflicts of interest	Governance and Nominating Committee Corporate Governance Business Conduct Policies Related Person Transaction Approval Policy Annual Report (pages 173-181) 2018 Proxy Statement (pages 23-33)
102-26	Role of highest governance body in setting purpose, values, and strategy	Board of Directors Safety, Sustainability and Public Issues Committee Audit Committee Officers
102-27	Collective knowledge of highest governance body	Safety, Sustainability and Public Issues Committee Audit Committee
102-28	Evaluating the highest governance body's performance	2018 Proxy Statement (pages 23-33) The Board of Directors annually assesses the effectiveness of the full board, the operations of its committees and the contributions of director nominees.
102-29	Identifying and managing economic, environmental, and social impacts	Safety, Sustainability and Public Issues Committee Audit Committee
102-30	Effectiveness of risk management processes	2018 Proxy Statement (page 28) Safety, Sustainability and Public Issues Committee Risks, Opportunities and Challenges
102-31	Review of economic, environmental, and social topics	Alcoa Corporation's Board of Directors and its committees review impacts, risks and opportunities at regularly scheduled board/committee meetings five to six times annually.

GRI 102 General Disclosures 2016

Disclosure	Description	Location
102-32	Highest governance body's role in sustainability reporting	Alcoa Corporation's Board of Directors does not have an active role in the report's development. Senior leaders are responsible for the report's content.
102-33	Communicating critical concerns	Stockholders and employees can communicate any concerns to Alcoa's Board of Directors through: • Regular mail, addressed to Chairman of the Board, c/o Alcoa Corporation, Corporate Secretary's Office, 201 Isabella Street, Suite 500, Pittsburgh, PA 15212-5858, USA; • Regular mail, addressed to Audit Committee, c/o Alcoa Corporation, Corporate Secretary's Office, 201 Isabella Street, Suite 500, Pittsburgh, PA 15212-5858, USA; • Integrity Line; • Stockholder resolutions; • Stockholder recommendations for director nominees; • Shareholder nominations from the floor of the annual meeting; and • Union representation or work councils.
102-34	Nature and total number of critical concerns	Stakeholder and Community Engagement
102-35	Remuneration policies	2018 Proxy Statement (pages 20-22 and 38-70)
102-36	Process for determining remuneration	2018 Proxy Statement (pages 20-22 and 38-70)
102-37	Stakeholders' involvement in remuneration	2018 Proxy Statement (pages 20-22 and 38-70)
102-38	Annual total compensation ratio	We report the global ratio only. 2018 Proxy Statement (page 69)
Stakeholder Engagement		
102-40	List of stakeholder groups	Stakeholder and Community Engagement
102-41	Collective bargaining agreements	Annual Report (page 27)
102-42	Identifying and selecting stakeholders	Stakeholder and Community Engagement
102-43	Approach to stakeholder engagement	Stakeholder and Community Engagement
102-44	Key topics and concerns raised	Stakeholder and Community Engagement
Reporting Practice		
102-45	Entities included in the consolidated financial statements	Annual Report All entities included in the consolidated financial statements are included in the sustainability report. Page 97 explains the principles of consolidation, and page 188 includes a list of significant subsidiaries.
102-46	Defining report content and topic Boundaries	Reporting and Materiality
102-47	List of material topics	Reporting and Materiality
102-48	Restatements of information	Found throughout the report.
102-49	Changes in reporting	Changes in reporting from prior year are indicated throughout the report
102-50	Reporting period	2017
102-51	Date of most recent report	2106
102-52	Reporting cycle	Annual
102-53	Contact point for questions regarding the report	Rosa Garcia Piñeiro Vice President, Sustainability Sustainability@alcoa.com

GRI 102 General Disclosures 2016

Disclosure	Description	Location
102-54	Claims of reporting in accordance with the GRI Standards	This report has been prepared in accordance with the GRI Standards: Core option.
102-55	GRI content index	Global Reporting Initiative Index
102-56	External assurance	Reporting and Materiality First Environment Limited Assurance Verification Statement

Material Topics

Disclosure	Description	Location
GRI 201: Economic Performance 2016		
201-1	Direct economic value generated and distributed	Shared Value Creation
201-2	Financial implications and other risks and opportunities due to climate change	Risks, Opportunities and Challenges Climate Protection
201-3	Defined benefit plan obligations and other retirement plans	Annual Report (pages 134-142)
GRI 302: Energy 2016		
302-1	Energy consumption within the organization	Energy
302-2	Energy consumption outside of the organization	Energy
302-3	Energy intensity	Energy
302-4	Reduction of energy consumption	Energy
302-5	Reductions in energy requirements of products and services	Products Climate Protection Recycling
GRI 303: Water 2016		
303-1	Water withdrawal by source	Water
GRI 304: Biodiversity 2016		
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Biodiversity and Mine Rehabilitation
304-2	Significant impacts of activities, products, and services on biodiversity	Biodiversity and Mine Rehabilitation
304-3	Habitats protected or restored	Biodiversity and Mine Rehabilitation
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	Biodiversity and Mine Rehabilitation
GRI 305: Emissions 2016		
305-1	Direct (Scope 1) GHG emissions	Climate Protection
305-2	Energy indirect (Scope 2) GHG emissions	Climate Protection
305-3	Other indirect (Scope 3) GHG emissions	Climate Protection
305-4	GHG emissions intensity	Climate Protection
305-5	Reduction of GHG emissions	Climate Protection Recycling

Material Topics

Disclosure	Description	Location
305-6	Emissions of ozone-depleting substances (ODS)	Emissions
305-7	Nitrogen oxides (NO_x), sulfur oxides (SO_x), and other significant air emissions	Emissions
GRI 306: Effluents and Waste 2016		
306-2	Waste by type and disposal method	Waste
306-3	Significant spills	Environmental Compliance
GRI 403: Occupational Health and Safety 2016		
403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	Safety and Health Absentee rates are not provided due to the information not being collected and compiled on a global basis. We do not anticipate reporting this information in the near future.
GRI 413: Local Communities 2016		
413-1	Operations with local community engagement, impact assessments and development programs	Stakeholder and Community Engagement

Mining and Metals Sector Supplement Disclosures

Disclosure	Description	Location
MM1	Amount of land (owned or leased, and managed for production activities or extractive use) disturbed or rehabilitate	Biodiversity and Mine Rehabilitation
MM2	The number and percentage of total sites identified as requiring biodiversity management plans according to stated criteria, and the number (percentage) of those sites with plans in place	Biodiversity and Mine Rehabilitation
MM3	Total amounts of overburden, rock, tailings, and sludges and their associated risks	Waste Biodiversity and Mine Rehabilitation
MM4	Number of strikes and lock-outs exceeding one week's duration, by country	There were zero strikes or lockouts in 2017.
MM5	Total number of operations taking place in or adjacent to indigenous peoples' territories, and number and percentage of operations or sites where there are formal agreements with indigenous peoples' communities	Biodiversity and Mine Rehabilitation
MM6	Number and description of significant disputes relating to land use, customary rights of local communities and indigenous peoples	Stakeholder and Community Engagement
MM7	The extent to which grievance mechanisms were used to resolve disputes relating to land use, customary rights of local communities and indigenous peoples, and the outcomes.	Stakeholder and Community Engagement
MM8	Number (and percentage) of company operating sites where artisanal and small-scale mining takes place on, or adjacent to, the site; the associated risks and the actions taken to manage and mitigate these risks.	Due to the minimal artisanal and small-scale mining on Alcoa sites worldwide, there is not a formal corporate policy. Action is taken on a case-by-case basis.

Mining and Metals Sector Supplement Disclosures

Disclosure	Description	Location
MM9	Sites where resettlements took place, the number of households resettled in each, and how their livelihoods were affected in the process	No resettlements took place in 2017.
MM10	Number and percentage of operations with closure plan	Facility Transformation

Safety Data

Fatalities
Employees/all contractors

	Global	Australia	Europe	North America	South America
2013	**0/0**	0	0	0	0
2014	**0/1**	0	0	0/1	0
2015	**2/1**	0/1	0	2/0	0
2016	**0/1**	0	0	0	0/1
2017	**0/3**	0	0/1	0	0/2

Fatalities by Gender
Employees and all contractors

	Male	Female	Total
2013	0	0	**0**
2014	1	0	**1**
2015	3	0	**3**
2016	1	0	**1**
2017	3	0	**3**

Fatal and Serious Injuries/Illnesses
Employees and all contractors

	FSI Actuals *(Events resulting in a fatal or serious injury/illness)*	FSI Potentials *(Near-miss events)*	Total FSI Events
2014	14	795	**809**
2015	5	707	**712**
2016	5	303	**308**
2017	5	430	**435**

Data changes from prior reporting are due to recordkeeping audits and injury classification reviews. A serious injury/illness is any incident that is life-threatening or life-altering. We began formally tracking FSIs in 2014.

Days Away, Restricted and Transfer Rate
Employees and all contractors

	Global	U.S. Manufacturing Average	Australia	Europe	North America	South America
2013	**0.29**	2.2	1.06	0.15	0.48	0.17
2014	**0.39**	2.2	0.82	0.20	0.46	0.08
2015	**0.35**	2.2	0.47	0.30	0.40	0.11
2016	**0.31**	1.8	0.50	0.15	0.28	0.25
2017	**0.66**		0.83	0.56	0.87	0.28

The 2017 Bureau of Labor Statistics U.S. manufacturing industry average was not available at the time this report was published. Days away, restricted and transfer rate includes lost workday cases plus cases that involve days of restricted duty and job transfer per 100 full-time workers.

Days Away, Restricted and Transfer Rate
Employees and supervised contractors

	Global	U.S. Manufacturing Average	Australia	Europe	North America	South America
2013	**0.47**	2.2	1.10	0.10	0.48	0.14
2014	**0.47**	2.2	0.80	0.21	0.55	0.06
2015	**0.38**	2.2	0.45	0.26	0.46	0.15
2016	**0.30**	1.8	0.56	0.20	0.23	0.11
2017	**0.90**		1.04	0.63	1.08	0.32

The 2017 Bureau of Labor Statistics U.S. manufacturing industry average was not available at the time this report was published. Days away, restricted and transfer rate includes lost workday cases plus cases that involve days of restricted duty and job transfer per 100 full-time workers.

Days Away, Restricted and Transfer Incidents by Gender
Employees and supervised contractors

	Male	Female	Total
2013	108	10	**118**
2014	82	7	**89**
2015	56	3	**59**
2016	30	1	**31**
2017	118	10	**128**

Days Away, Restricted and Transfer Rate
Non-supervised contractors

	Global	Australia	Europe	North America	South America
2013	**0.16**	0.94	0.28	0.77	0.18
2014	**0.21**	0.86	0.17	0.34	0.10
2015	**0.25**	0.54	0.28	0.33	0.08
2016	**0.22**	0.07	0.00	0.29	0.32
2017	**0.24**	0.25	0.34	0.12	0.23

Because contractors not directly supervised by Alcoa maintain their own health and safety programs and are accountable for investigating incidents involving their employees, certain details associated with their internal investigations are not fully transparent to Alcoa.

Days Away, Restricted and Transfer Incidents by Gender
Non-supervised contractors

	Male	Female	Total
2013	45	7	**52**
2014	23	4	**27**
2015	20	1	**21**
2016	16	1	**17**
2017	19	0	**19**

Lost Workday Rate
Employees and all contractors

	Global	U.S. Manufacturing Average	Australia	Europe	North America	South America
2013	**0.09**	1.0	0.38	0.10	0.06	0.07
2014	**0.13**	1.0	0.38	0.02	0.10	0.00
2015	**0.13**	1.3	0.23	0.07	0.13	0.05
2016	**0.16**	0.8	0.32	0.08	0.12	0.13
2017	**0.26**		0.46	0.11	0.20	0.20

The 2017 Bureau of Labor Statistics U.S. manufacturing industry average was not available at the time this report was published. Lost workday rate represents the number of injuries and illnesses resulting in one or more days away from work per 100 full-time workers.

Lost Workday Rate
Employees and supervised contractors

	Global	U.S. Manufacturing Average	Australia	Europe	North America	South America
2013	**0.16**	1.0	0.44	0.10	0.08	0.10
2014	**0.15**	1.0	0.41	0.00	0.10	0.00
2015	**0.14**	1.3	0.25	0.03	0.12	0.11
2016	**0.17**	0.8	0.32	0.10	0.11	0.11
2017	**0.31**		0.57	0.11	0.24	0.19

The 2017 Bureau of Labor Statistics U.S. manufacturing industry average was not available at the time this report was published. Lost workday rate represents the number of injuries and illnesses resulting in one or more days away from work per 100 full-time workers.

Lost Workday Incidents by Gender
Employees and supervised contractors

	Male	Female	Total
2013	48	2	**50**
2014	41	3	**44**
2015	34	0	**34**
2016	30	2	**32**
2017	40	4	**44**

Lost Workday Rate
Non-supervised contractors

	Global	Australia	Europe	North America	South America
2013	**0.04**	0.21	0.09	0.13	0.06
2014	**0.07**	0.29	0.09	0.14	0.00
2015	**0.11**	0.18	0.19	0.22	0.00
2016	**0.10**	0.07	0.00	0.07	0.15
2017	**0.16**	0.19	0.11	0.06	0.21

Because contractors not directly supervised by Alcoa maintain their own health and safety programs and are accountable for investigating incidents involving their employees, certain details associated with their internal investigations are not fully transparent to Alcoa.

Lost Workday Incidents by Gender
Non-supervised contractors

	Male	Female	Total
2013	11	1	**12**
2014	8	1	**9**
2015	9	0	**9**
2016	5	1	**6**
2017	13	0	**13**

Total Recordable Incident Rate
Employees and all contractors

	Global	U.S. Manufacturing Average	Australia	Europe	North America	South America
2013	**0.72**	4.0	2.17	0.43	1.29	0.47
2014	**1.27**	4.0	1.88	0.57	1.91	0.42
2015	**1.18**	3.8	1.35	0.82	1.63	0.44
2016	**1.18**	3.2	1.45	0.79	1.45	0.56
2017	**1.67**		1.91	1.22	2.51	0.57

The 2017 Bureau of Labor Statistics U.S. manufacturing industry average was not available at the time this report was published. Total recordable incident rate includes days away, restricted and transfer cases plus cases that involve days of medical treatment or other recordables per 100 full-time workers.

Total Recordable Incident Rate
Employees and supervised contractors

	Global	U.S. Manufacturing Average	Australia	Europe	North America	South America
2013	**1.25**	4.0	2.23	0.49	1.49	0.43
2014	**1.55**	4.0	1.92	0.59	2.23	0.33
2015	**1.34**	3.8	1.27	0.77	1.88	0.34
2016	**1.32**	3.2	1.48	0.92	1.65	0.46
2017	**2.19**		2.13	1.36	3.06	0.64

The 2017 Bureau of Labor Statistics U.S. manufacturing industry average was not available at the time this report was published. Total recordable incident rate includes days away, restricted and transfer cases plus cases that involve days of medical treatment or other recordables per 100 full-time workers.

Total Recordable Incidents by Gender
Employees and supervised contractors

	Male	Female	Total
2013	391	21	**412**
2014	406	30	**436**
2015	302	16	**318**
2016	234	23	**257**
2017	284	29	**313**

Total Recordable Incident Rate

Non-supervised contractors

	Global	Australia	Europe	North America	South America
2013	**0.32**	1.99	0.28	0.84	0.50
2014	**0.69**	1.71	0.52	1.08	0.51
2015	**0.77**	1.56	0.75	0.72	0.50
2016	**0.68**	0.97	0.32	0.81	0.61
2017	**0.73**	1.33	0.79	0.56	0.54

Because contractors not directly supervised by Alcoa maintain their own health and safety programs and are accountable for investigating incidents involving their employees, certain details associated with their internal investigations are not fully transparent to Alcoa.

Total Recordable Incidents by Gender

Non-supervised contractors

	Male	Female	**Total**
2013	96	8	**104**
2014	69	8	**77**
2015	61	4	**65**
2016	45	3	**48**
2017	55	3	**58**

First Environment Limited Assurance Verification Statement

Verification Statement

Alcoa Corp
201 Isabella Street
Pittsburgh, PA 15212

First Environment performed a verification of emissions sources contained in Alcoa Corp's (Alcoa) 2017 GHG Inventory, as represented to First Environment in "REV_Final_2017_GHG_Inventory_07April18.xlsx" and "REV_Final_2017_Scope 3_Inventory_07April2018. xlsx," and Alcoa's total energy consumption as represented to First Environment in "REV_Final_2017_GHG_Inventory_07April18.xlsx." The GHG Inventory and associated energy consumption total were prepared by representatives of Alcoa and submitted to First Environment for assessment.

The scope of the GHG Inventory is as shown in Table 1:

Table 1: Alcoa's GHG Inventory Scope

Organizational Boundaries	Operational/Financial Control
Geographic Boundaries	Global
Operational Boundaries	Scope 1, 2, and 3 emissions
Reporting Period	EY2017
Included Greenhouse Gases	CO_2, CH_4, N_2O, PFCs, and SF_6
Included Metrics	Total reported energy consumption
Reported Scope 1 and 2 Emissions	22,926,195 tCO_2e*
Reported Energy Consumption	166,709,105.57 GJ 42,846,873.58 MWh

*Reported Scope 2 emissions are quantified using "location-based" methods.

The specific Scope 3 emission categories, sources, and total emissions reported by Alcoa are shown in Table 2:

Table 2: Alcoa's Scope 3 GHG Assertion Details

Emissions Category	Included Scope 3 Emission Sources	Reported Emissions (tCO_2e)
Category 1: Purchased Goods and Services	Goods purchased in excess of 40,000 MT	3,036,383
Category 3: Fuel and Energy Related Activities	Includes purchased fuels for all Alcoa business units that are available in the Alcoa Global Environmental Metrics Systems. Excludes upstream emissions from electricity generation.	1,491,242
Category 5: Waste Generated in Operations	Waste generation and transport from all Alcoa aluminum smelters	10,255
Category 6: Business Travel	Business travel (air) for all employees in North America, Europe (excluding Iceland), Brazil, and Australia	5,543
Category 9: Downstream transportation and distribution	Truck and rail transportation for North American locations	103,310
Category 10 – Processing of Sold Products	Transformation of third party sales of bauxite, alumina, and primary products into intermediate products	34,031,726

Reported Scope 3 emissions are comprised of emissions of CO_2, CH_4, N_2O and PFCs.
All reported emissions are quantified using the global warming potentials from the IPCC Fourth Assessment Report.

Verification Statement

Verification Objectives

The primary objective of the verification process is to provide Alcoa with an independent opinion of veracity of the GHG and energy consumption data presented in its GHG Inventory for the emission year 2017. Based on this statement, Alcoa is seeking a confirmation that the 2017 GHG Inventory is in conformance with the specified criteria and accurate relative to specified materiality thresholds for the purposes of assuring internal confidence for voluntary public reporting.

Reporting and Verification Criteria

The GHG inventory was prepared and assessed using the following criteria:

- Basis of Preparation & Procedures, Alcoa Corp 2017 Energy Consumption and Greenhouse Gas Emissions (Scope 1 and Scope 2), 6 March 2018
- 2017 Basis of Preparation & Procedures Scope 3 Emissions, 7 March 2018

As informed by:

- The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Ed.) including Required Greenhouse Gases in Inventories, Accounting and Reporting Standard Amendment, February 2013 and GHG Protocol Scope 2 Guidance, 2015
- The Aluminium Sector Greenhouse Gas Protocol (Addendum to the WRI/WBCSD Greenhouse Gas Protocol), October 2006
- Corporate Value Chain (Scope 3 standard) Accounting and Reporting Standard (WRI WBCSD), September 2011
- Technical Guidance for Calculating Scope 3 Emissions, a companion document to the Scope 3 Standard, Version 1.0, 2013

The verification was performed consistent with ISO 14064, Part 3: *Specification with guidance for the validation and verification of greenhouse gas assertions*.

The definition of materiality for the verification process was as follows:

- A material misstatement is a discrepancy in total Scope 1 and 2 emissions of greater than five percent.
- A material misstatement is a discrepancy in total reported energy consumption of greater than five percent.
- A material misstatement is a discrepancy greater than ten percent in any Scope 3 emissions category.

Verification Methods

The verification process consisted of a strategic review of the entire inventory, followed by review of a risk-based sample of historical evidence of source emissions estimates. Interviews with staff responsible for data collection and the administration of centralized data management systems conducted during previous verification activities for Alcoa and at a site visit at the Deschambault smelter facility during the current verification process also informed First Environment's emissions assessments. The effectiveness of the data management system and its controls were tested through assessment of database outputs and tracing of reported activity data to physical records. The results of these evaluations were used in the preparation of First Environment's estimates of Alcoa's emissions. First Environment's estimates were compared against Alcoa's total reported emissions and energy consumption considering both the GHG Inventory's conformance to the requirements of the criteria, as well as its overall accuracy.

Level of Assurance

The level of assurance for the verification was to provide limited assurance of the assertions' accuracy and adherence to specified reporting criteria.

Verifier Independence

First Environment was not responsible for preparation of any part of the GHG inventory. First Environment confirms that we are not aware of any issue that could impair our objectivity in relation to this verification engagement.

Verification Statement

Conclusion

Based on the results of the verification activities performed, First Environment concludes, with limited assurance, that no evidence was identified to suggest reported emissions in Alcoa's 2017 GHG inventory as represented in "REV_Final_2017_GHG_Inventory_07April18.xlsx" and "REV_Final_2017_Scope 3_Inventory_07April2018. xlsx," and Alcoa's total energy consumption as represented to First Environment in "REV_Final_2017_GHG_Inventory_07 April18.xlsx" are not materially correct.

This verification statement is provided on the Ninth of April, Two-thousand and eighteen.

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_____ Michael M. Carim, Lead Verifier

_____ B. Tod Delaney, Independent Internal Reviewer

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