



# 2012

## Sustainability at a Glance



### Sustainability Highlights

- For every metric ton of aluminum we made in 2012, we emitted 23% less greenhouse gases than we did in 2005.
- We launched the Alcoa Global Wellness Initiative to focus on the most important health issues for our employees.
- Of our key suppliers, we rated 74% as either leading or active in regards to their sustainability programs.
- Our forged aluminum truck wheels were the latest of our products to receive Cradle to Cradle® Certification.
- Alcoa and Alcoa Foundation invested more than US\$40 million in community programs, and our employees volunteered more than 800,000 hours in their communities.
- We were included in the Dow Jones Sustainability Indexes for the 11th consecutive time and also received the prestigious Catalyst Award for advancing women in the workplace.

### Sustainability Strategy

At Alcoa, we integrate sustainability into our core business strategy using a multi-layered structure headed by our chief sustainability officer. This is supported by a set of long-term strategic targets for our businesses and locations to integrate all aspects of sustainability into their day-to-day operations.

We use sustainability scorecards to measure progress against our near-term sustainability metrics and seamlessly integrate sustainability concepts into our business processes. Each business also has developed a roadmap that clearly lays out the process steps, business decisions, and technical improvements necessary year-by-year to achieve its longer-term objectives.

To ensure the integration of sustainability into our core business strategies, our CEO has championed pay for performance to achieve specific sustainability objectives. During 2012, 20% of our variable compensation was tied to achieving significant aspects of our sustainability targets.

### Financial Performance

We executed and delivered on our 2012 financial targets despite an extremely challenging environment, especially with respect to primary aluminum, which had a London Metal Exchange average price of US\$2,019 during the year.

Highlights of our financial performance include:

- A four percentage point reduction on the smelting cost curve;
- Lowest year-end net debt since 2006;
- Record annual after tax operating income (ATOI) and an all-time high adjusted earnings before interest, tax, depreciation, and amortization (EBITDA) margin for our Engineered Products and Solutions business; and
- Record annual ATOI and adjusted EBITDA per metric ton for our Global Rolled Products business.

We also exceeded our targets for generation of positive free cash flow.



***"At Alcoa, we are committed to living our values regardless of the challenges we face. By staying true to that commitment, we made significant strides toward our strategic sustainability targets in 2012 despite significant global economic volatility."***

**Klaus Kleinfeld**  
Alcoa Chairman and Chief Executive Officer



SCAN TO READ  
the full Chairman  
& CEO Statement.

# Improving Our Products

Through their light weight, high strength, durability, and recyclability, our products are inherently sustainable and improve the sustainability of our customers' products.

## Product Design & Life Cycle

Our forged aluminum truck wheels, which help customers reduce their fuel consumption and greenhouse gas emis-



sions, were the latest of our products to receive Cradle to Cradle® Certification. Our primary aluminum, lithographic sheet, can sheet, three product lines from our Kawneer business, and the aluminum bottle also have received this certification.

In 2012, we released the results of a comparative life cycle assessment that highlighted the benefits of our forged aluminum truck wheels over their high-strength steel counterparts. The peer-reviewed, ISO-compliant study found that converting one commercial truck from high-strength steel wheels to aluminum wheels can reduce the vehicle's carbon footprint by 16.3 metric tons of carbon dioxide equivalents (CO<sub>2</sub>e) in North America and 13.3 metric tons of CO<sub>2</sub>e in Europe over the vehicle's lifetime.

## Transportation

Aluminum is the ideal material for transportation applications. It is strong and durable, and its light weight helps reduce the overall weight of an aircraft, automobile, or commercial vehicle to improve fuel economy and significantly reduce emissions during the use phase.

For the next generation of short-range aircraft, we have developed new alloys and technologies that can lower the weight of the plane by up to 10% versus composite-intensive planes and lower fuel use per seat by approximately 50% compared to the last generation and up to 16% compared to the current generation.



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the Alcoa &  
Transportation  
video.

Our aluminum automotive solutions include body sheet, brazing sheet (which we invented), wheels, and extrusions that, when compared to steel, can be up to 50% lighter. We also produce automotive fasteners.

In 2012, the U.S. government finalized stricter standards for vehicle fuel economy

that go into effect in 2025. We are investing US\$300 million to expand our Davenport, Iowa, USA, plant to meet rising aluminum demand expected from these corporate average fuel economy (CAFE) standards.

To improve the fuel efficiency of commercial fleets, we introduced a new line of forged truck wheels in Europe in 2012. These wheels are up to 44% lighter than steel equivalents and support the move to higher-load-capacity tires.



*New forged truck wheel for the European market*

## Packaging

One of the most sustainable solutions for eliminating packaging waste is using aluminum in food and beverage packaging. The benefits are significant and include the following:

- Aluminum cans are recycled and back on the store shelf in only 60 days.
- The U.S. aluminum can's total recycled content averages 68% compared to 30% for glass and 3% for PET, making it the highest of any beverage container.
- Today's aluminum can is manufactured with 44% lower greenhouse gases and 30% less energy compared to a can manufactured 20 years ago.
- At 13 grams (0.5 ounces), the aluminum can is 15% lighter than in 1993, helping reduce transportation fuel use and emissions. It is lighter than a carbonated soft drink PET bottle (on average 24 grams/0.8 ounces) and glass bottle (typically 199 grams/7 ounces).

We operate the largest can reclamation facility in the world in Alcoa, Tennessee, USA. This facility re-melts enough used beverage containers to make billions of new aluminum cans each year. We also operate the largest can reclamation facility in the southern hemisphere at our Yennora facility in Australia.



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the Alcoa Can  
Sheet video.

## Building & Construction

When used in buildings, aluminum can enhance energy efficiency, reduce carbon emissions, and help achieve green-building standards. For example, intelligent facades



incorporating aluminum systems can decrease energy consumption in buildings by up to 50%.



*The student center at the Monterrey Technical University in Mexico, which features Alcoa Reynobond® composite materials, was named the Sustainable Design winner in the 2012 Metal Architecture Design Awards.*

Recent innovations include Reynobond® with EcoClean™, which is the first coil-coated architectural panel that helps clean itself and the air around it. Our Versoleil™ SunShade reduces energy use by minimizing the amount of direct sunlight and solar heat gain that enters a building. Our InLighten® Light Shelf reflects sunlight deeper into the interior of a building to reduce the need for artificial lighting, and our OptiQ™ Ultra Thermal Windows maintain thermal continuity, reduce thermal transmission, and help retain interior heat.

## Industrial & Engineered

We are the world's leading producer of blades and vanes made of advanced super alloys for the high-temperature environments in jet engines and industrial gas turbines. These products help engines and turbines run at hotter temperatures, improving the overall energy efficiency and reducing noise, emissions, and the overall carbon footprint.

We are also a leading manufacturer of fastener systems made of aluminum, corrosion-resistant steels, titanium, super alloys, and more for the aerospace, automotive, and commercial transportation markets.

Our Aluminum Alloy Drill Pipe (AADP®) is gaining traction in the rapidly expanding extended-reach drilling market. Approximately 40% lighter than conventional steel drill pipe, AADP allows existing drilling assets (both land and offshore rigs) to drill deeper and farther by reducing the overall weight load of the drill pipe.



*Aluminum Alloy Drill Pipe offers light weight yet high strength.*

## Consumer Electronics

Consumer electronics represents a fast-growing market for aluminum. The aluminum content in LCD televisions is expected to increase by 15% between 2013 and 2015, with

a 10% increase projected for laptops. Overall, we expect aluminum consumption in consumer electronics to increase 10% during this three-year period.

Aluminum offers many performance and design advantages for consumer electronics, including light weight, recyclability, durability, improved heat conduction, production efficiencies, and aesthetics.

## Recycling

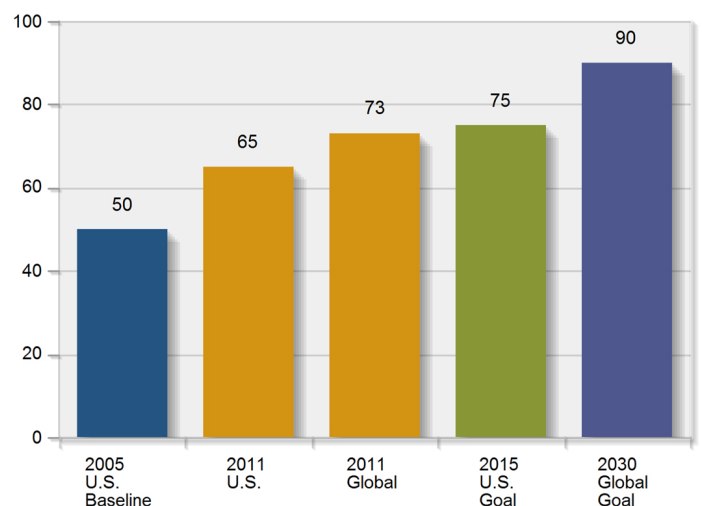
Aluminum is infinitely recyclable, making it the sustainable material of choice in the markets Alcoa serves. As a result, almost 75% of all the primary aluminum ever produced since 1888 is still in productive use. Recycling aluminum only uses 5% of the energy required to make new aluminum ingot. In addition, recycled aluminum creates 95% less greenhouse gas emissions than new aluminum.

We have an aggressive goal to raise the U.S. used beverage can (UBC) recycling rate to 75% by 2015 and the global recycling rate to 90% by 2030. The rates stood at 65% and 73% in 2011, the most recent year data were available. One driver of a seven-point jump in the 2011 U.S. rate was the import of around 11 billion UBCs from outside the country to meet industry demand.

Globally, Alcoa and Alcoa Foundation invested close to US\$5 million between 2007 and 2012 to develop community-based recycling programs. Both also announced funding for some US\$2 million in recycling outreach activities in partnership with Keep America Beautiful at the September 2012 meeting of the Clinton Global Initiative.

### Can Recycling Rate

Percent recycled



Goal: 75% U.S.

Progress: As of Dec. 2012

65%

# Protecting Our Resources



Efficient use of resources, such as water and energy, and effective control of emissions, waste, and land use have positioned us as an industry leader in minimizing our environmental footprint.

## Climate Protection

One of our current goals is to reduce the total carbon dioxide intensity in our Global Primary Products business (refining and smelting) by 30% by 2020 and 35% by 2030 from a 2005 baseline.

For every metric ton of aluminum we now make, we emit 23% less greenhouse gases (GHGs) than we did in 2005. Our total direct and indirect greenhouse emissions decreased 24% to 46.5 million metric tons during the same period.

### Global Primary Products Greenhouse Gas Emission Intensity

Metric tons of CO<sub>2</sub> equivalents (CO<sub>2e</sub>) per ton of production

	Refining	Smelting	Total
2005 Baseline	0.63	9.20	10.40
2011	0.57	6.94	8.03
2012	0.57	6.91	7.99
2012 Reduction from Baseline	9.5%	24.9%	23.2%
2020 Goal			7.28 (30%)
2030 Goal			6.76 (35%)

Goal: 30% reduction Progress: As of Dec. 2012 **↓ 23.2%**

The total represents the combined impact of refining and smelting operations indexed to metric tons of primary metal production. These two processes and their associated power supply represent approximately 90% of Alcoa's total GHG emissions.

## Energy

We are committed to reducing the energy requirements for all of our operations and have set the following long-term strategic targets:

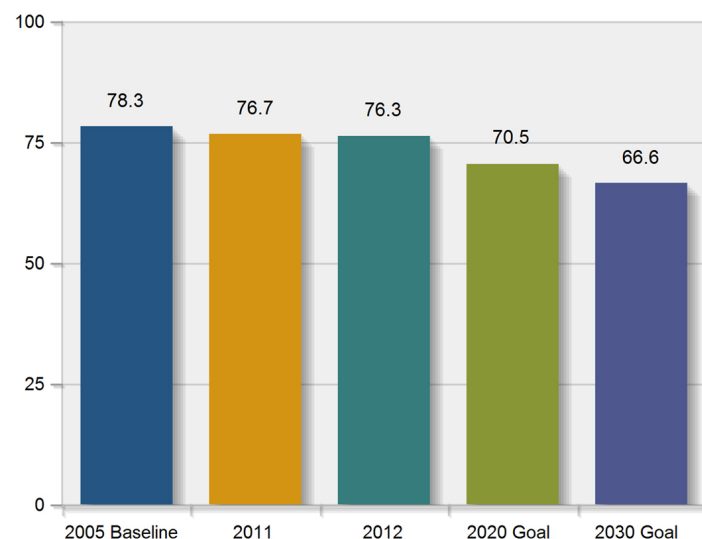
- From a 2005 baseline, 10% reduction in the energy intensity of Global Primary Products by 2020; 15% by 2030; and
- From a 2005 baseline, 20% reduction in the energy intensity of all other businesses (Global Rolled Products and Engineered Products and Solutions) by 2020; 30% by 2030.

Global Primary Products reduced its energy intensity by 0.5% compared to 2011 and 2.6% compared to the 2005 baseline. Global Rolled Products had a 6.7% reduction compared to 2011 and 14.4% decrease compared to the

2005 baseline. Engineered Products and Solutions reduced its energy intensity by 1.8% compared to 2011 and 8.4% compared to the 2005 baseline.

### Energy Intensity—Global Primary Products

Gigajoules per metric ton of aluminum produced



Goal: 10% reduction

Progress: As of Dec. 2012 **↓ 2.6%**

## Waste

Under our strategic sustainability targets, we are focusing our waste efforts on what we consider our most important issues—bauxite residue and landfilled waste.

### Bauxite Residue

A byproduct of the alumina refining industry, bauxite residue is stored in impoundments that are capped and re-vegetated when full.

Our long-term strategic targets for the material, and our progress against them through 2012, are:

- From a 2005 baseline, 15% reduction in bauxite residue land requirements per unit of alumina produced by 2020; 30% by 2030. Achieved 12%.
- Rehabilitate 30% of total residue storage area by 2020; 40% by 2030. Achieved 15%.
- Recycle or reuse 15% of residue generated by 2020; 30% by 2030. Achieved 0%.

To meet these goals, we are continually improving our residue storage practices and investigating ways to decrease the material's



SCAN TO VIEW  
the Alumina  
Refining video.

alkalinity for environmental and reuse purposes. We are also exploring new product applications for bauxite residue, such as a crushed rock material called ReadyGrit™.

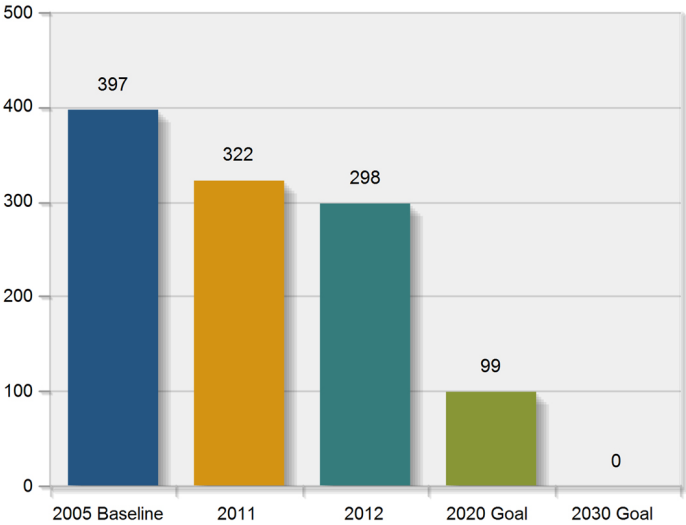
Landfilled Waste

Our current strategic target for landfilled waste is a 75% reduction by 2020 and 100% by 2030 from a 2005 base-line. The goal excludes certain large-volume process waste streams from refining and power generation that are addressed through separate programs.

In 2012, we achieved a 25% decrease in landfilled waste from the baseline. We saw an increase in waste volumes from certain facilities that we permanently decommissioned during the year, and we worked hard to minimize these increases.

Landfilled Waste

Thousands of metric tons



Goal: 75% reduction      Progress: As of Dec. 2012 ↓ 25%

Water

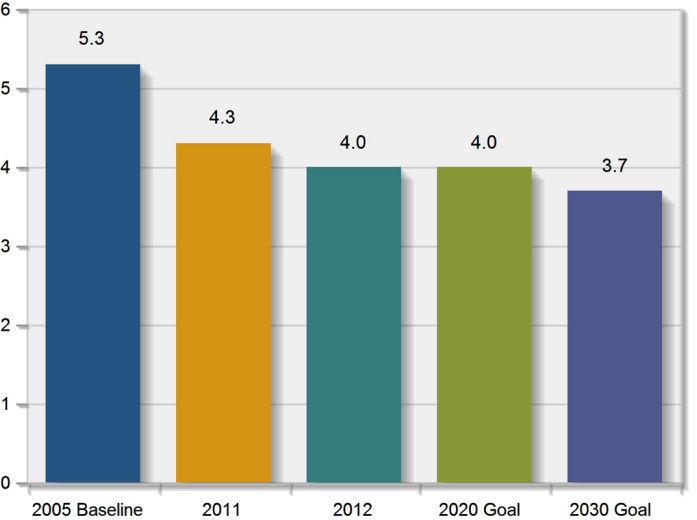
Our refining and ingot-casting processes require significant water resources, and we work to ensure water efficiency across all of our operations. We place an even greater focus on conservation in regions where water availability is most sensitive, such as Australia.

In early 2012, we set new goals for freshwater-use intensity since we exceeded our 2020 goal in 2011. Our new goals are to achieve a 25% improvement in freshwater-use intensity by 2020 and 30% by 2030 versus 2005 levels.

Through 2012, we reduced our freshwater-use intensity by 24% versus 2005 levels, almost achieving our 2020 goal.

Freshwater-Use Intensity

Cubic meters of water per metric ton of production



Goal: 25% reduction      Progress: As of Dec. 2012 ↓ 24%

Our 2012 actual result of 4.03 rounds to 4.0, while our 2020 goal of a 25% reduction in intensity is 3.98, which also rounds to 4.0. Water usage from power utilities are excluded from the intensity metric, which reflects only our manufacturing operations. The total represents the combined impacts of refining, smelting, and fabrication indexed to metric tons of production. Engineered Products and Solutions data are not included.

Mine Rehabilitation

During 2012, we validated our corporate objective to reduce our collective mining footprint to the minimum required for efficient resource recovery. Company-wide, our current target is to reduce our active mining footprint to approximately 4,300 hectares (10,625 acres) by 2020. We had approximately 15,000 hectares (37,065 acres) of open mine area at the end of 2012.

A key driver toward the minimum footprint will be our strategic sustainability targets:

- By 2020, achieve a rolling five-year corporate-wide ratio of 0.75:1 for new active mining disturbance to rehabilitation; and
- By 2030, maintain a ratio of 1:1 to ensure no net expansion in new disturbance (i.e., achieve a footprint-neutral condition).

Overall new disturbance, including new active mining areas and new infrastructure development, totaled 1,103 hectares (2,726 acres) in 2012. Rehabilitated land totaled 1,234 hectares (3,049 acres).

Based on actual data from 2010 through 2012, combined with projections for the following two years, we believe that our corporate-wide five-year average ratio will be approximately 0.95:1 in 2014.



SCAN TO VIEW the Bauxite Mining video.



# Enhancing Our Workplace

We place great value on our employees and suppliers and hold each responsible for working in a manner that adheres to the highest standards for human rights and is safe, responsible, ethical, and focused on sustainability.

## Human Rights

Alcoa's Human Rights Policy comprises policies related to children and young workers, freedom of engagement, equality of opportunity, compensation, freedom of association, and relationships with indigenous people.

We endorse the United Nations Global Compact with respect to human rights. The compact's 10 principles provide that businesses should support and respect the protection of internationally proclaimed human rights and ensure that they are not complicit in human rights abuses.

We have a mandatory human rights training course that select employees must complete as part of their standard training curriculum. Nearly 5,000 employees have completed the course since its initial deployment in late 2010. In 2012, we expanded the training population to include the majority of our salaried employees. As a result, more than 18,000 employees will, over a period of time, be enrolled in the online human rights training course.

## Our People

In 2012, we adopted a new company vision in response to employee engagement survey results—Alcoa. Advancing each generation. This vision acknowledges and credits the people and innovations that make it possible and aligns all stakeholders to what we want to accomplish as a company.

A major people achievement in 2012 was meeting our diversity goal to increase global female employment and U.S. minority employment in the professional and executive ranks. At the end of 2012, women constituted 19% of our global leadership, and 16% of U.S. minorities held leadership positions. We further raised these goals for 2013.

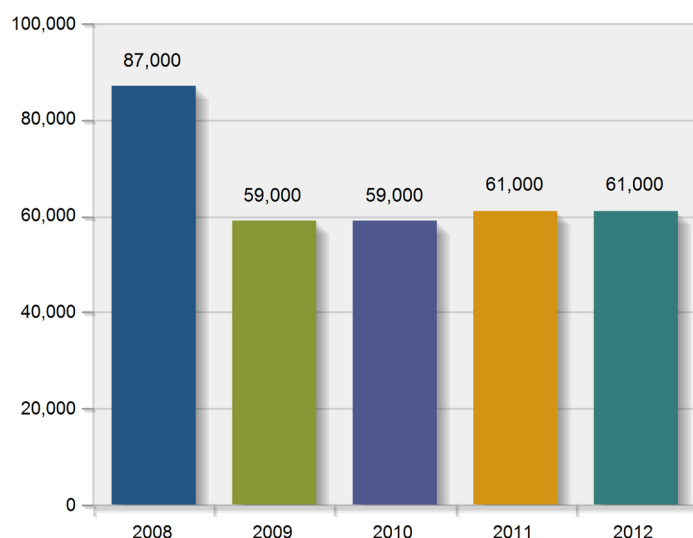
In early 2013, we received the prestigious Catalyst Award, which honors innovative organizational approaches that address the recruitment, development, and advancement of women in the workplace.



SCAN TO VIEW  
the Catalyst Award  
video.

Each year, our entire workforce is invited to participate in our Global Voices Survey, which measures 10 dimensions of the employee experience. From 2010 to 2012, our employee engagement score increased from 60% to 72% despite downward trends in manufacturing's best-in-class companies. The overall response rate in 2012 was 94%, which has been consistent over the last three years and is higher than most external benchmarks we follow.

## Number of Employees



Alcoa does not aggregate global data differentiating part-time from full-time employees. Decline in employment between 2008 and 2009 was due primarily to a series of divestitures and restructuring programs.

## Safety, Health, & Wellness

Zero work-related injuries and illnesses have been long-standing goals for Alcoa. This makes it all the more disappointing that we suffered two tragic employee fatalities in 2012.

In 2012, we shifted our focus to the days away, restricted, or transferred (DART) rate as our primary safety metric to place additional attention on eliminating the more serious incidents first. At the end of 2012, 50.3% of our safety reporting units had worked 12 consecutive months without a DART incident.

During the year, our total recordable incident rate (TRIR) declined by 14% compared to 2011. Our DART and TRIR rates were, respectively, 79% and 76% lower than the most recent U.S. manufacturing average.

## Incident Rates

	Lost Workday	Days Away, Restricted, or Transferred	Total Recordable
2008	0.12	0.76	1.34
2009	0.13	0.69	1.28
2010	0.12	0.78	1.35
2011	0.12	0.78	1.24
2012	0.13	0.50	1.07

Lost workday incident rate represents the number of injuries and illnesses resulting in one or more days away from work per 100 full-time workers. Days away, restricted, or transferred rate includes lost workday cases plus cases that involve days of restricted duty and job transfer per 100 full-time workers. Total recordable incident rate represents the number of injuries and illnesses resulting in days away from work, job transfer or restriction, medical treatment, or other recordables per 100 full-time workers.

We have established a 2020 goal to control at least 50% of all significant ergonomic risks against a 2011 baseline, and all global operating locations are working toward this objective. By year-end 2012, we had controlled 284 risks (15%) company-wide.

We rolled out our new Global Wellness Initiative in 2012 with an initial focus on our U.S. locations. This program created the tools and support infrastructure to help our employees address their most important issues—physical activity, nutrition, tobacco usage, and well-being. Our U.S. facilities hosted more than 500 wellness programs, and one-third of the employees participated. Thanks to a tobacco-cessation campaign late in the year, around 400 employees committed to kick a tobacco habit. We are working to build on this early success as we expand the program globally in 2013.



## Supply Chain

As an important business partner, our suppliers play an integral role in helping us achieve our sustainability goals.

Our Global Supplier Sustainability Program focuses on our key suppliers that pose the greatest sustainability opportunities and risks to Alcoa and consists of four components:

- **Communicate expectations:** We clearly define sustainability expectations in our supplier sourcing, qualification, and management activities.
- **Assess suppliers:** We conduct assessments of our key suppliers to evaluate the maturity of their sustainability programs and to determine where improvements are needed.
- **Develop and educate:** For suppliers that fall into the emerging or lagging areas, we educate them regarding our sustainability expectations and provide them with access to tools to develop and improve their programs.
- **Monitor:** The suppliers in the emerging and lagging categories are reassessed on an annual basis so that program progress can be measured and monitored.

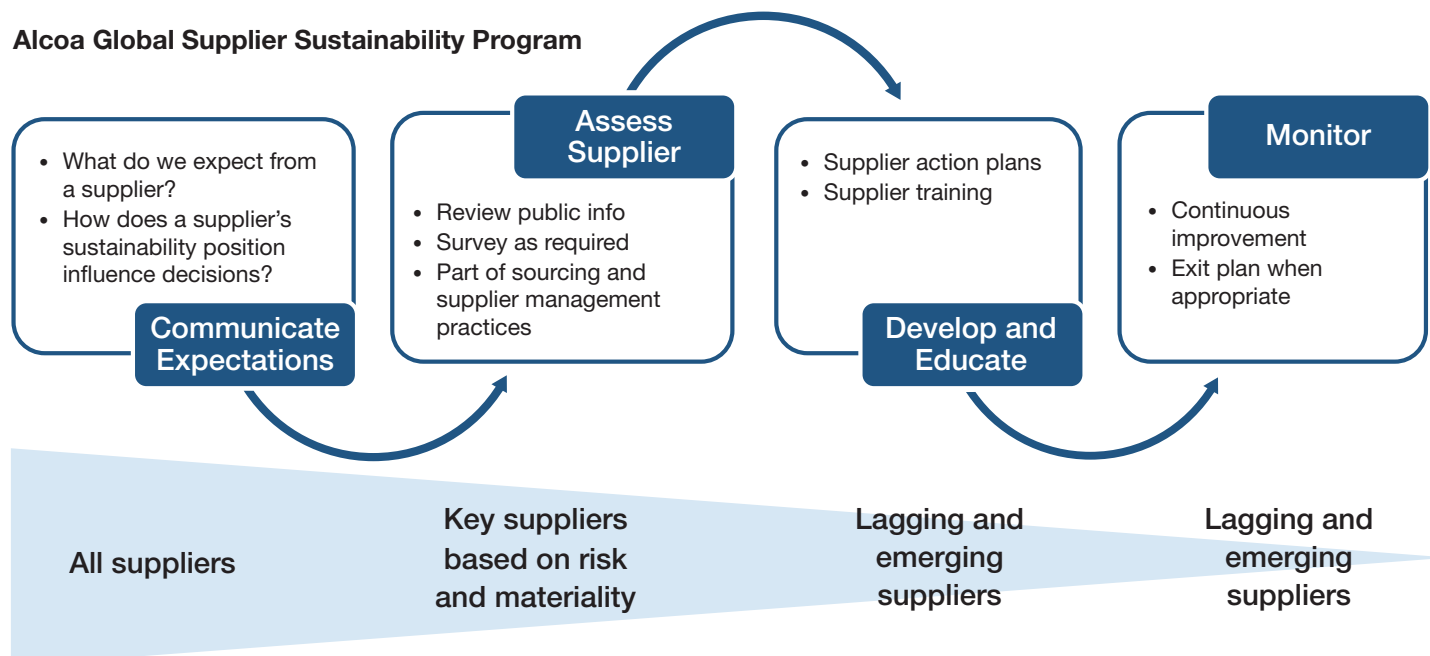
In 2012, we evaluated additional key suppliers and worked with those that received 2011 maturity ratings of lagging or emerging to develop and improve their programs. Our key suppliers' ratings improved as a result of our efforts, with 74% rated as either leading or active in 2012.

### Supplier Assessment Results

Percent of Key Suppliers

Maturity Rating	2011	2012
Leading	16	17
Active	52	57
Emerging	22	18
Lagging	10	8

### Alcoa Global Supplier Sustainability Program



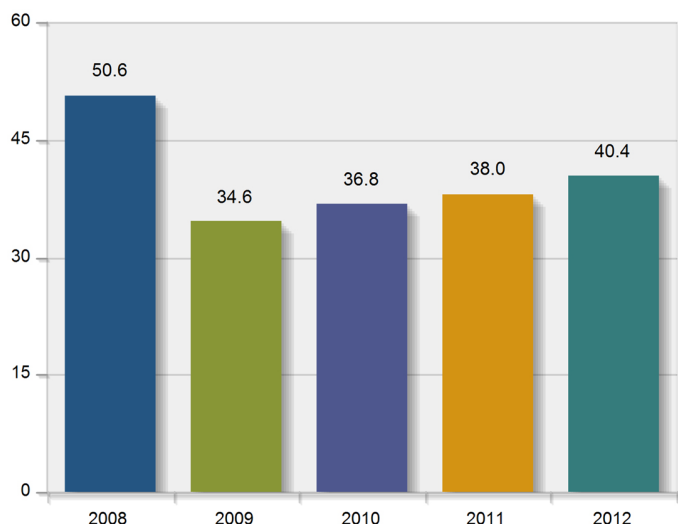
# Sustaining Our Communities

We are committed to transparent and open engagement with stakeholders, as well as improving the quality of life in the communities in which we operate.

## Community Investment

In 2012, Alcoa and Alcoa Foundation made more than US\$40 million in community investments to support Alcoa's license to operate. Alcoa Foundation directed US\$21.5 million in funding toward enhancing the environment, educating tomorrow's workforce for careers in advanced manufacturing and

**Alcoa and Alcoa Foundation Combined Community Giving**  
Millions of U.S. dollars



engineering, and strengthening communities where Alcoa operates around the world. Alcoa and Alcoa-related foundations contributed an additional US\$18.9 million to support projects and partnerships with non-governmental and non-profit organizations around the world.

We achieved record employee community engagement in 2012, with 60% of employees participating in the annual Month of Service. Our employees volunteered more than 800,000 hours throughout 2012, which is the equivalent of 385 people working full-time during the year.



SCAN TO VIEW  
the Alcoa  
Foundation website.

## Stakeholder Engagement

We understand the importance of having transparent and regular dialogue with all of our stakeholders to ensure that we both understand their issues and concerns and provide them with information.

The principal way we manage engagement with stakeholders at the community level is through the Alcoa Community Framework. We also develop relationships with appropriate stakeholders at the regional or global level.

Examples of community and stakeholder issues that were raised during 2012 are highlighted below. A more complete listing is available in our online reporting.

### 2012 Stakeholder Issues

Location	Issue	Response
Western Australia Mining Operations	Environmental and community impacts of proposed mining operations.	We continued to meet with the Keysbrook Hills Community Group to address community concerns about potential impacts related to noise, traffic, water, dust, and the black cockatoo's habitat. We proposed a tailored mine plan aimed at reducing the potential impacts.
Juruti Mine, Brazil	Health and safety of residents located near the mine's port and railroad.	We implemented two community programs—"Look at the Train" and "Passing through the River"—to increase safety awareness among residents. More than 17,500 people had participated in the programs through the end of 2012.
Alcoa Fjarðaál, Iceland	Increased fluoride detected in grass.	Alcoa Fjarðaál measured increased fluoride levels in grass around the plant. Following root-cause analysis, the plant took several steps to fix related technical issues to reduce the fluoride emission levels and engaged with local stakeholders.

**Forward-Looking Statements:** This report contains, in addition to historical information, statements concerning Alcoa's expectations, goals, targets, strategies, or future performance. These "forward-looking statements" include such words as "anticipates," "estimates," "should," "will," or other words of similar meaning and are subject to a number of known and unknown risks and uncertainties. Some of the factors that may cause Alcoa's actual results to differ materially from those expressed or implied in the forward-looking statements include changes in aluminum industry or global economic conditions generally, factors affecting Alcoa's operations, such as unavailability of energy, equipment outages, natural disasters, or other unexpected events, changes in the regulatory environment, the impact of reductions in Alcoa's capital expenditures, Alcoa's inability to realize expected benefits from its productivity improvement, sustainability, restructuring, technology, and other initiatives, and the other risk factors summarized in Alcoa's Form 10-K for the year ended December 31, 2012 and other SEC reports.



SCAN TO READ  
Alcoa's in-depth online  
sustainability report.