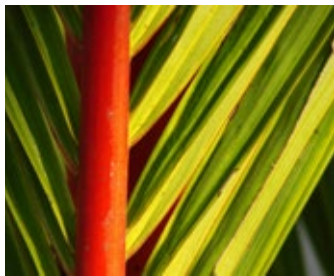


Sustainability Report 2015



About this Report



For the ninth consecutive year, Vale is publishing its Sustainability Report in accordance with the Global Reporting Initiative (GRI) guidelines, and for the first time this year it is adopting the full version of G4 version, using Comprehensive option. Also in the report, indicators are included from the Mining and Metals Sector Supplement, as well the reference to Sustainable Development Goals (SDGs) and Global Compact, of the United Nations (UN).¹ All indicators highlighted in their respective account and/or data, in addition to being included in the GRI Content Index at the end of this report. [G4-30](#) | [G4-32](#)

This document presents the company's performance (actions, challenges, results and achievements) in 2015² and does not introduce any significant modifications to the way data is presented compared to the previous report for the fiscal year of 2014, published on April 24, 2015. For comparison purposes, we have provided historical data from the two previous years³ if applicable. This report has been verified by the external independent auditing company Bureau Veritas Brasil, the declaration for which can be found on [page 87](#). [G4-2](#) | [G4-13](#) | [G4-27](#) | [G4-28](#) | [G4-29](#) | [G4-30](#) | [G4-32](#) | [G4-33](#)

Materiality [G4-18](#) | [G4-20](#) | [G4-21](#) | [G4-25](#)

In order to define the content in this report, Vale has used a materiality analysis process developed in 2014, and updated the sustainability context in 2015, involving the following steps:

Survey of priority themes: evaluation of a range of internal and external documents, national and international, related to the company's operational segments. This evaluation process and the media analysis led to the inclusion of Waste among material themes of Vale.

Validation and organization of priority themes: the themes from last period underwent validation by executive directors of the company. Eleven directors were interviewed altogether and agreed with the evaluation process of the material themes as well as helped deepening how to deal with these themes throughout the publication.

Vale took the materiality definition process to another level, aligned with GRI-G4 guideline, and began a process of surveying external stakeholders to assess a level of agreement with the material themes. The survey was available on the company's website (www.vale.com), in

Portuguese and English versions, for 15 days. The information about how to view the content was published on Facebook and LinkedIn and had 105 accesses, of which 92% were satisfied or very satisfied with the themes chosen as material, especially the topic Dam Management on the material theme Waste. [G4-18](#)

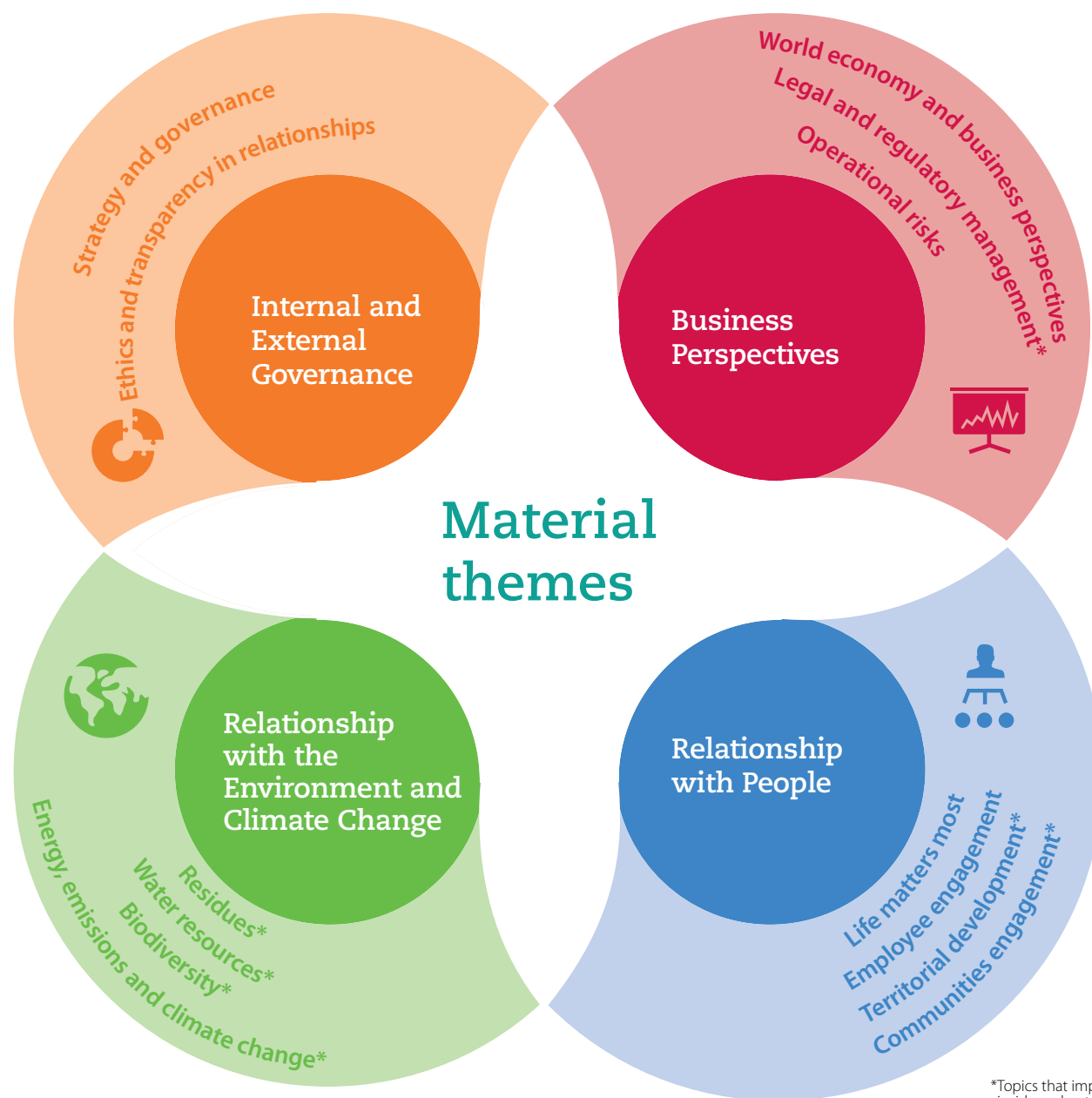
As in 2014, the priority themes were grouped into the four main blocks that provide the guidelines for this report (see the following diagram), which contains 69 indicators, including sector related. In relation to scope and boundaries, the company has also adopted the same report limits as in previous reports.

The analysis of impact location as recommended by the GRI G4 was made by experts and should go through the consultation process to the area leaders of Vale in the next materiality cycle. [G4-18](#) | [G4-19](#) | [G4-20](#)

1. The Sustainability Reports performs the role of Communication on Progress (COP) as part of the Global Compact.
2. Any differences in total data or percentages in graphs and charts should be attributed to the rounding of values. Throughout this report, values in Brazilian *reals* have been converted to US dollars using an exchange rate of R\$3.16.
3. In view of the complexity of our activities, Vale does not have a single business unit criterion. Therefore, some indicators are not expressed as a percentage in comparison to business unit figures.



For more information on sustainability, please contact us through our Contact channel on our website. www.vale.com. [G4-31](#)



*Topics that impact inside and outside the company. For the others, impacts occur inside the company.

Report scope (Boundary)

Vale used its materiality matrix for guidance and definition on information to be included in this report, as well as defining the scope (boundary) to be considered, in accordance with Material Aspects and Bounderies definition methodology.

The indicators that will be presented here have been mapped taking into account our stakeholders' expectations and interests, so as to be able to have an influence on their assessments and investment decisions, while also reflecting the company's significant economic, environmental and social impacts.⁴ In 2015, there were no company relevant mergers, acquisitions or sales, compared to that disclosed in the 2014 Report. With regard to performance, this report takes into account all the companies in the Vale Group in which the company holds an equity stake of more than 50%, associated to materiality theme, both in Brazil and abroad. [G4-22](#) | [G4-23](#) | [G4-27](#)



For further details, please see the Report 20-F under the section on Investors at Vale's website www.vale.com.

In controlled companies, Vale contributes in different governing bodies in its subsidiaries and may also participate in committees dealing with environmental, health and safety, human resources and financial issues. Through these mechanisms, Vale participates in strategic decisions and influence the development of rules and policies at these companies or entities, observing the present legislation where the company is established, including sustainability issues. In the affiliated companies or entities, in which Vale has 20% to 50 % of the voting capital, or has shared control, Vale has seats on the Directors Board, in many cases, and can integrate advisory committees. Vale seeks that the members indicated for these boards and committees have a performance aligned with its environmental policies, health and safety, human resources and finance, although, in the absence of control, is not able to guarantee the implementation of the same standards of its policies and rules.

You can check out the highlights of each chapter on pages [5](#), [6](#), [7](#) and [8](#).

⁴ The scope of operations covered in each indicator may vary. For projects, environmental expenditures, resettlement, socioeconomic studies, human resources, health and safety and biodiversity are included in the report (G4-EN11, G4-EN13 and MM1). The most relevant characteristics are presented throughout the report.

Vale is a part of your life

Nickel



Electrical wiring



Anticorrosives



Chemical processing equipment



Wristwatches



Aircraft turbines



Kitchen utensils



Computer hard drives



Kitchen sinks



Emission control equipment



Medical instruments



Car wheels



Rechargeable batteries



Magnets



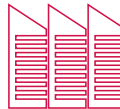
Office furniture



Coins



Architectural structures



Food processing factories



CDs and DVDs



Batteries

Iron ore



Sewage pipes



Hydrants



Blenders



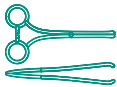
Bulldozers



Washing machines



Aircraft



Surgical equipment



Telecommunication networks



Refrigeration piping



Freight trains



Cars



Rulers



Steel wool



Kitchen sinks



Ballpoint pens



Taps



Sport stadiums



Cell phones



Sewing machines



Zippers



Staples



Train tracks



Rural equipment



Refrigerators



Industrial robotics



Frames



Cutlery



Nails and Screws



Bridges



Power grid

Coal

Energy generation



Industrial fuel



Steel fabrication

Copper

Microchips



Televisions



Gas pipes



Air conditioning units



Electrical wiring

Manganese



Batteries



Paint for civil construction



Stainless steel

Potassium, phosphates and nitrogenous compounds



Fertilizers

Code of Ethics and Global Anti-Corruption Program

In 2015 was developed the online training about anticorruption, which will be applying to all employees until 2016. [page 19](#)

5,000

Number of consultations (due diligence) carried out by third-parties covering human rights, safety and corruption aspects. [page 32](#)

Internal and External Governance

SDG

In 2015, Vale contributed to drawing up the United Nations Sustainable Development Goals (SDG), through Sustainable Development Solutions Network. [page 27](#)

Suppliers Code of Ethics and Conduct

In 2015, 50,000 contracts were signed with companies operation in 60 countries. The Suppliers Code of Ethics and Conduct, which is signed by suppliers at the time of hiring, emphasizes the prohibition of child labour or forced labour, or working conditions analogous to slavery. [page 22](#)



Goals achieved according with the Sustainability KPI, contemplated in the Vale's variable remuneration program. [page 28](#)

53%

Significant reduction of response time for the complainant, compared to 2013, because of improvements in the complaints handling process. [page 21](#)

Ombudsman based on best practices

The department, which promotes the continuous improvement of ethical awareness and ensures the internal and external public a regular and transparent communication channel in the treatment of complaints, adopts the best market practices – observed from benchmarking of other companies. [page 19](#)

Business Perspectives

1.6 billion dollar

Reduced value of expenses at the year as a result of efforts to maintain the competitiveness of the mining industry, efficiency and austerity. [page 36](#)

Ponta da Madeira world's largest port

Celebrating 30 years of operation in 2016, the Ponta da Madeira Maritime Terminal (TMPM in Portuguese) has evolved steadily over the years, thanks to the commitment and dedication of its employees and service providers. The leader in terms of cargo handling in Brazil, the terminal undergoing capacity expansion works to cope with the increase in production from S11D, that will transform into the world's largest port. [page 39](#)

In 2015, to continue to expand its activities, Vale obtained

130

environmental licenses/authorizations.

[page 41](#)

345.9 Mt

Iron ore production volume accounted for in the year, of which 129.6 Mt were related to Carajás, which set a record for the period. [page 36](#)

800.1 million dollars

in funds invested in 2015, 71% in environmental stock and 29% in social stock. [page 39](#)

In 2015, Vale had over

166,000

direct employees and contractors around the world, 78% of them in Brazil. [page 43](#)



Gender equity

Vale recognizes and promotes talent and ability in women, reducing this historical and cultural discrepancy, without creating a discriminatory environment. Since 2014, has been a signatory of the UN Women – Women's Empowerment Principles. [page 49](#)

Relationship with People

Over 3,000 leaders engagement

The theme Health and Safety is widely disseminated to create a culture of Active Genuine care and placing emphasis on the corporate value "Life matters most". [page 47](#)

90%

was the percentage purchases made locally in 2015, two percentage points higher than the previous year.

[page 53](#)

Integrated Management Model

In 2015, 5,132 demands and complaints were received from the communities, of which 786 are being dealt with, 257 were deemed to be outside the company's control and all the others were properly solved during the same period. [page 57](#)

Vale promoted the Day of Reflection about fatalities, efforts to achieve Zero Harm and concepts of heart and mind with participation of 106,000 employees and contractors. [page 53](#)

Approximately 254 million dollars

was obtained in the form of financing and credit to train suppliers. [page 54](#)

A partnership signed in 2015 between Vale and Federal Government makes it possible for learning institutions graduate and qualify workforce at the operational level, which resulted in the offering of 790 places as part of Pronatec – Production Sector. [page 56](#)

In 2015, the local hiring rate was

72%

eight percentage points higher than the previous year.

[page 57](#)

Vale Foundation [page 64](#)

Seeks to make progress in the economic and social spheres in areas where the Company has operations, with initiatives in these particular themes:

Education

Job and income generation

Health

Culture

Sport

Urban development

572 million dollars

Funds invested in 2015 in environmental actions.

[page 73](#)

5%

Is the increase of the participation of renewable energy in Vale's energy matrix in the last 3 years. [page 67](#)

78,4 million dollars

Total of funds invested in year in waste management, which means 13.7% of environmental expenditure. [page 77](#)

279,000 km²

Total of natural areas that Vale helped to protect with the maintenance of Fundo Vale's activities. [page 87](#)

161 million dollar

was the total invested through Vale in the Water Resources theme in 2015, value that represents 28% of the total environmental expenditure. Initiatives to control demand and new technologies are examples of measures which exceed basic legal requirements.

[page 74](#)

82% Percentage of water recycled and reused in 2015, which means 1.6 billion m³, volume which is equivalent to 640 thousand Olympic swimming pools. [page 75](#)

Dam management

The dams undergo visual inspection and monitoring of structural control. The data are analyzed by geotechnical engineers, who make sure that the reading level of the instruments is consistent with the normal operations. [page 79](#)

In 2015, Vale implemented its first bio-plant, focused on preservation of plant biodiversity, focused on the reproduction of orchids, bromeliads, cacti, native grasses and trees from Iron Quadrangle. Since March, it has been produced 600,000 seedlings from 63 different species.

[page 89](#)

Relationship with the Environment and Climate Change

Considering the portfolio of projects of Carbon Goal and other additions, in 2015 Vale reduced its scope emissions by about 1.0 million tCO₂e, eight new projects were implemented and 18 other projects were maintained.

[page 67](#)

Vale invests in improvement, systems and monitoring dam. In this way, it has been reducing the generation of mining and metallurgical waste every year:

2013 = 813 million tons

2014 = 753 million tons

2015 = 728 million tons [page 78](#)

Message from the Board of Directors

G4-1



Vale's businesses face a crisis in the international market of commodities that not only affects revenue but also led the company to perform write-downs in 2015. The economic result recorded in the year was released amid an adverse scenario, combining falling prices of iron ore and other commodities, such as nickel. Also, there was the serious accident involving Samarco's dam failure in the municipalities of Mariana and Ouro Preto, in the state of Minas Gerais (Brazil), which we deeply regret and show our solidarity to employees, their families and affected communities.

Despite the economic situation, however, we have strengthened our ability to optimize resources, increase productivity and thus create value for investors. We have achieved a solid operating performance. The business strategy is still directed to sustainable development, to allow us to cross the volatility of economic cycles, and is based on cost discipline and world-class assets.

We have concluded relevant projects, such as the opening of the N4WS mine and the N5S extension in Carajás, the completion of the projects Conceição Itabiritos II, Cauê Itabiritos and Moatize II, in addition to having reached several annual production records in 2015, for example, the annual supply of iron ore of 345.9 Mt, Carajás' production of 129.6 Mt, nickel production of 291,000 t and the production of 423,800 t of copper.

At the same time, in Brazil, we keep going firmly with the implementation of the project Carajás S11D, in the state of Pará, which will give new impetus to business from 2017. We will conclude, in 2016, the North Logistical Corridor project with the doubling of the Carajás railroad, the building of a new rail extension and the expansion capacity of the Ponta da Madeira Maritime Terminal to meet the increasing production estimated with the S11D project. The project will add 90 million tons to the North System production and will transform Ponta da Madeira in the world's largest port.

Our productivity efforts resulted in higher production volumes and lower costs in all our commodities. Reducing the cash cost C1 of fine iron ore by 41%, the decrease in general and administrative expenses and pre-operating expenses, 39% and 17%, respectively, and the divestments of non-core assets, which totaled US\$3 billion, reaffirm our commitment to become increasingly competitive.

We are confident in our ability to overcome these difficult times based on our operational efficiency and rigor in our investments. We expect a future positive cash flow, with consequent gradual reduction of indebtedness and the increase in the dividends distribution, which reached US\$1.5 billion in 2015. We will maintain our commitment to communities and the environment as we have done in recent years, ensuring the

resources invested in the socioenvironmental area, which in 2015 totaled around US\$800 million. We also reaffirm our commitment to the United Nations Global Compact and the Goals for Sustainable Development.

On behalf of the Board of Directors, I thank the management, employees and partners of Vale for obtaining the results reported here. I invite everyone to know our journey towards an increasingly sustainable development.

Gueitiro Matsuo Genso

President of the
Board of Directors

Message from the Chief Executive Officer

G4-1



Every year, since 2007, we set a network of over a thousand employees around the world to assemble facts and data to build our Sustainability Report. We gathered and consolidated all information according to the guidelines of the Global Reporting Initiative (GRI), a global reference publication, in order to guarantee the construction of solid indicators that allow us to monitor accurately the topics we have moved forward and those which still require rigorous attention. These actions are part of our commitment to the principles of the UN's Global Compact relating to human rights, labour rights, combating corruption and the protection of the environment. We have not prepared a sustainability report with the single purpose of showing what we have done well. On the contrary. We have endeavoured to compile and create this report because we always seek to act in a responsible way towards society and the environment.

By publishing this document, we also intend to invite society to dialogue. As we inform our indicators with transparency, we want to open the door to the debate and the joint construction of best practices for the mining industry. "Life matters most" is a recognized value all Vale's employees live by on a daily basis, and we want to increasingly take the practice of Active Genuine Care – caring for yourself, caring for others and letting others care of you – beyond the borders of our company. While numbers are important, for us, life is and will always be superior to production. We invest in preventive policies and procedures to minimize risks and protect the integrity of those who work in our company, and we are open to contributions that help us reach the goal of Zero Harm.

Those who know the Health and Safety policy established by Vale may have the dimension of how devastating it was for our company the loss of 19 lives* as a result of the accident with Samarco's Fundão Dam in November 2015. Those who follow my career know that I have

made of "Life matters most" my guide since I became the president of the company in 2011; they also realize how the accident mobilized me personally. If I can guarantee anything, it is that Vale will continue to support Samarco in all that is necessary to minimize the pain of the victims and environmental damage, and that we will do whatever it takes to set the highest security parameters in the mining industry.

2015 was a year of great challenges to Vale. We had to react to an unfavorable external scenario, full of uncertainties, which led to plummeting prices of our main products. We have achieved several production records and reduced costs and expenses exponentially, but we still have ended the year at loss. We need to regain competitiveness, and we will do so by focusing on increasing our margins.

Undoubtedly we live a new moment for the mining industry. I am sure, however, that Vale, based on its values, is ready to face any scenario. With ethics, responsibility and effort, maintaining a constant and transparent dialogue with society, Vale will not only be more competitive in comparison to its competitors, but also shall be capable of having a fully effective Vision, which is to be the number one global natural resources company in creating longterm value, through excellence and passion for people and the planet.

Murilo Ferreira
Chief Executive Officer

*18 fatalities with one person still missing.

Executive Director



Murilo Ferreira
President and Chief Executive Officer



Galib Chaim
Executive Director,
Capital Projects



Humberto Freitas
Executive Director, Logistics
and Mineral Exploration



Jennifer Maki
Executive Director,
Base Metals



Luciano Siani
Chief Financial Officer,
Finance and Investor Relations



Peter Poppinga
Executive Director,
Ferrous



Roger Downey
Executive Director,
Fertilizers and Coal



Vania Somavilla
Executive Director, Human
Resources, Health and Safety,
Sustainability and Energy

Vale

Vale is a private-sector publicly traded company, with shares traded on São Paulo, New York, Hong Kong, Paris and Madrid stock exchanges. From its headquarters in Rio de Janeiro, the company has operations in 26 countries, across five continents. It is the largest mining company in the Americas and one of the biggest in the world – it ranks number one in the global production of iron ore, pellets and nickel. In addition to iron ore and nickel, its portfolio also includes manganese, ferroalloys, copper, platinum group metals (PGMs), gold, silver, cobalt, thermal and metallurgical coal, potassium, phosphates and other fertilizers. [G4-3](#) | [G4-4](#) | [G4-5](#) | [G4-6](#) | [G4-7](#) | [G4-8](#)

The company also operates major logistics systems in Brazil and in other regions of the world, including railways, marine terminals and ports, integrated with its mining operations. In addition to this, it has a fleet of cargo ships and floating transfer stations, as well as distribution centres to provide support for iron ore distribution in its coverage area. Vale also has major investments in the energy and steel sectors, both directly as well as through affiliates and joint ventures. [G4-17](#)

The company dedicates itself with passion to modify natural resources into wealth. To this end, its management is based on five strategic key elements:

Take care of our people | Seek zero accidents, develop a team of professionals who are trained and accountable for their decisions, and be a great place to work, with motivated people, development opportunities and quality of life. [G4-10](#)

Embed sustainability into the business | Build economic, social and environmental legacies in the regions where the company is present, mitigating the impacts of its operations on adjacent communities and promoting sustainable practices throughout its value chain. In addition, secure its licence to operate through integrated action, dialogue and transparency with stakeholders.

Manage our portfolio with discipline and efficiency | Be austere in its use of financial resources, focus on high-profitability assets, and attract partners to boost growth and manage risks.

Focus on iron ore | Reinforce company's leadership in iron ore by increasing the supply and quality of our products without raising costs, thereby recovering its market share.

Grow through world-class assets | Emphasize value creation over additional volume, focusing on competitive assets and projects that have scale, are expandable and can sustain multiple economic cycles, in iron ore, nickel, fertilizers, copper and metallurgical coal.

Mission [G4-56](#)

To transform natural resources into prosperity and sustainable development.

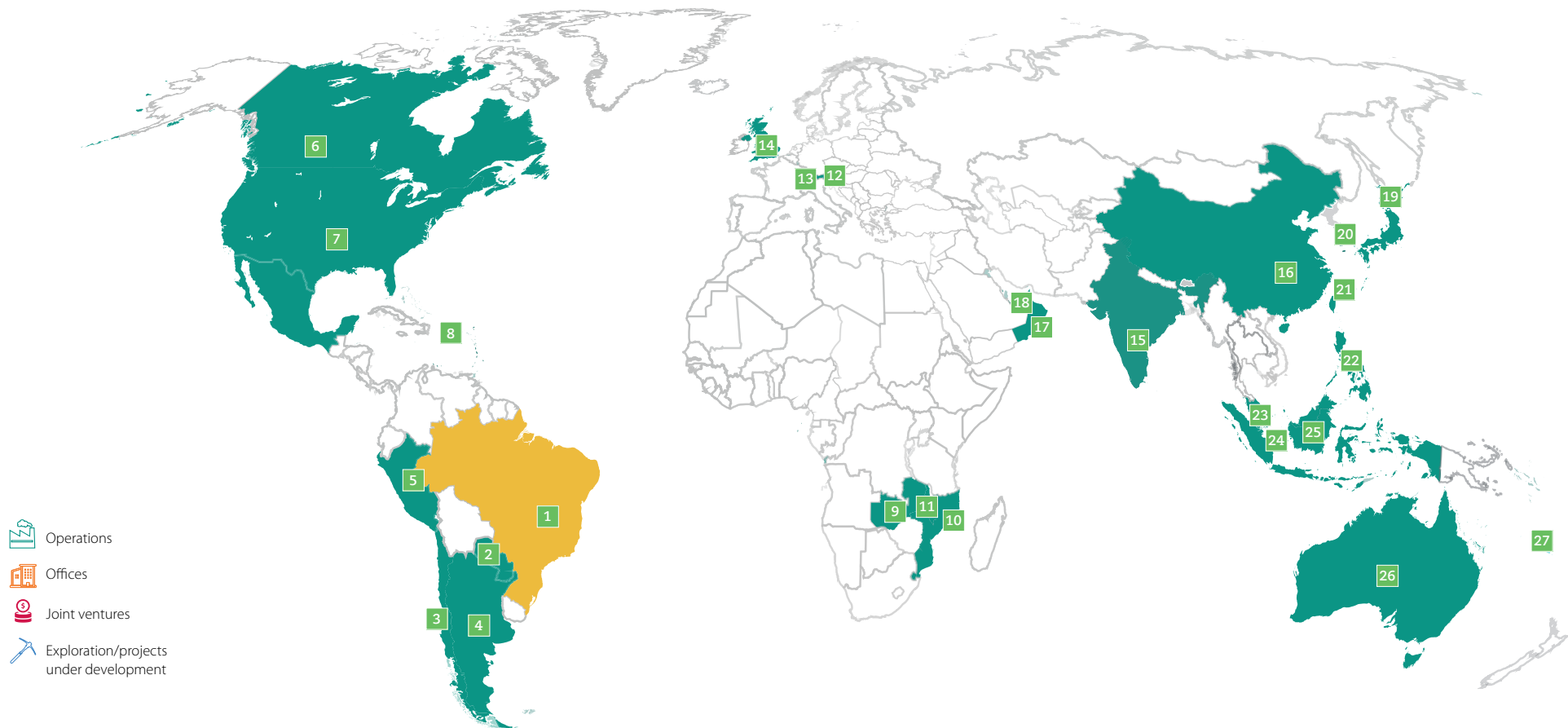
Vision [G4-56](#)

To be the number one global natural resources company in creating long-term value, through excellence and passion for people and the planet.

Values [G4-56](#)

- Life matters most
- Value our people
- Prize our planet
- Do what is right
- Improve together
- Make it happen

Vale's operations around the world



Americas

- 1 Brazil (Vale's worldwide headquarters)
- 2 Paraguay
- 3 Chile
- 4 Argentina
- 5 Peru
- 6 Canada
- 7 United States
- 8 Barbados

Africa

- 9 Zambia
- 10 Mozambique
- 11 Malawi

Europe

- 12 Switzerland
- 13 Austria
- 14 United Kingdom

Asia and Oceania

- 15 India
- 16 China
- 17 Oman
- 18 United Arab Emirates
- 19 Japan
- 20 South Korea
- 21 Taiwan
- 22 Philippines
- 23 Malaysia
- 24 Singapore
- 25 Indonesia
- 26 Australia
- 27 New Caledonia

Recognition

Vale's operation is centered on a solid approach and based on ethical relationships and passion for people and the planet. Here are just some of the prizes and certificates that attest to the recognition of the work carried out in 2015.

CDP Climate Change Program

Vale scored the second highest points for transparency in the evaluation of the CDP questionnaire among companies in Latin America, and was included in the CDLI (Climate Disclosure Leadership Index) for the fifth time.

Brazilian GHG Protocol Program

For the sixth consecutive time, the company received the program's Gold Seal qualification for its Greenhouse Gas Emission Inventory.

Safety Excellence

The Voisey's Bay mine in Labrador, producer of nickel, received the JT Ryan Award, granted by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), for being the safest mine in Canada in the Select Mines category. With a strong safety culture, Voisey's Bay continues to set high standards in the subject.

Carbon Efficient Index (IC02)

In 2015, the company maintained its position in the Carbon Efficient Index share portfolio, developed by the São Paulo Stock Exchange (BM&FBOVESPA) and the Brazilian National Development Bank (BNDES).

Best organization in 2015

Vale in Indonesia was elected best organization in the mining sector, by the magazine *Businessweek Indonesia*. The evaluation of the companies was based on performance related to financial information and the monitoring of its shares. This publication is part of Bloomberg Businessweek International, a company based in New York (USA).

Corporate Sustainability Index (ISE) of the São Paulo Stock Exchange (BM&FBOVESPA)

In 2015, Vale was listed for the fifth consecutive year in the index. However, the company does not make up the current portfolio in 2016. The decision made by the Deliberative Council of ISE does not affect Vale's commitment to sustainability in its operations.

Época Green Company Award

The company was among 16 award-winning companies, standing out particular for the installation of meteorological radar, which will help the state of Espírito Santo to deal with issues related to climate change.

Excellence in infrastructure

Vale in Malaysia received the Prize for Excellence in the Construction Industry for its efficiency in the area of infrastructure.

Best railway

The Carajás Railway (EFC), operated by Vale, was cited as the best cargo operator in Brazil in 2015, by *Revista Ferroviária* (Railway Magazine).

Executive of Value Award

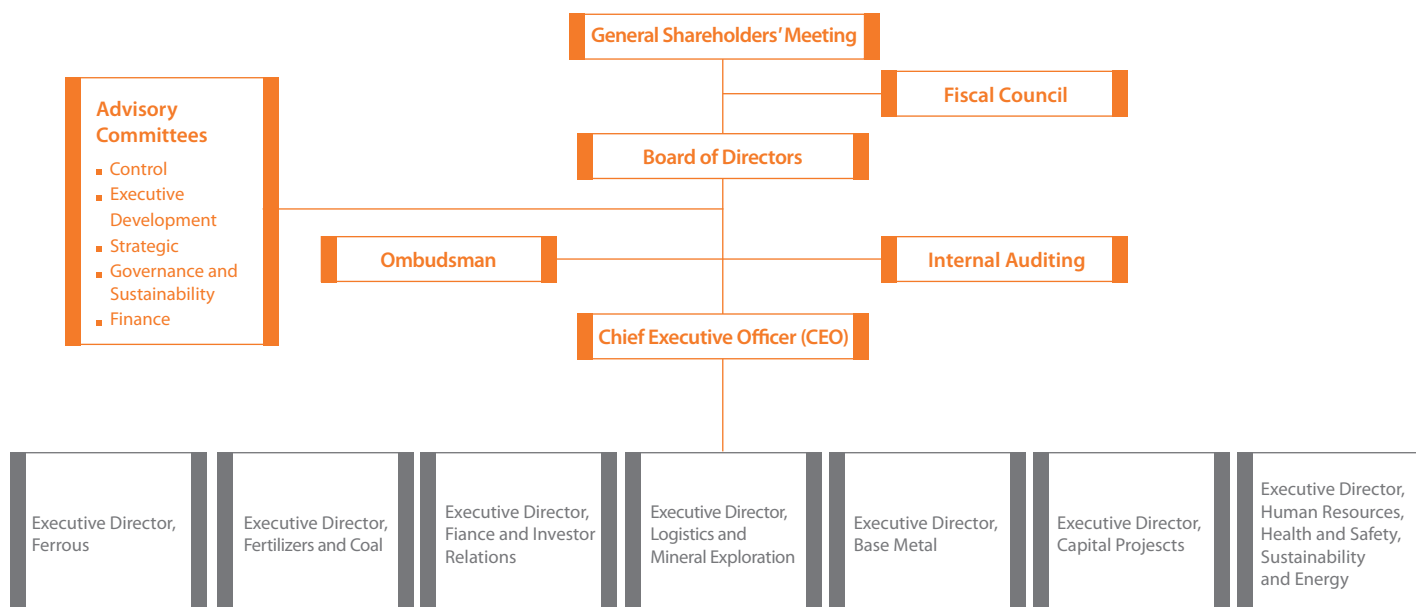
Vale's CEO, Murilo Ferreira, was one of the 23 business leaders to receive awards in the 15th edition of Executive of Value, hosted by *Valor Econômico* newspaper, which pays tribute to the best executives in Brazil.

Internal and External Governance

- Governance Structure
- Commitments
- Mechanisms of Dialogue
- Relationships with Public Authorities
- Institutional Partnership
- Sustainability KPI
- Risk Management
- Legal Compliance

Governance structure

Vale's corporate governance model is based on the key guiding principles of: clarity of roles, transparency and stability – positioning Vale on a path of growth and value creation. Internal guidelines form the basis of the company's management, such as Sustainable Development Policy, Global Climate Change Mitigation and Adaptation Policy, Social Action Policy, Human Rights Policy, Global Anti-Corruption Policy and Health and Safety and Environment Responsibility Guidelines. These are all adhered to within the following structure: [G4-15](#) | [G4-34](#) | [G4-35](#)



Sustainable Development, Anti-Corruption and Human Rights Policies are among the company's internal guidelines to support its management



Detailed information on the company's governance structure and its functioning can be obtained from the Reference Form, that is found on www.vale.com.

2006

Year in which the effectiveness of internal controls started to be evaluated by the company's management



Marcelo Coelho

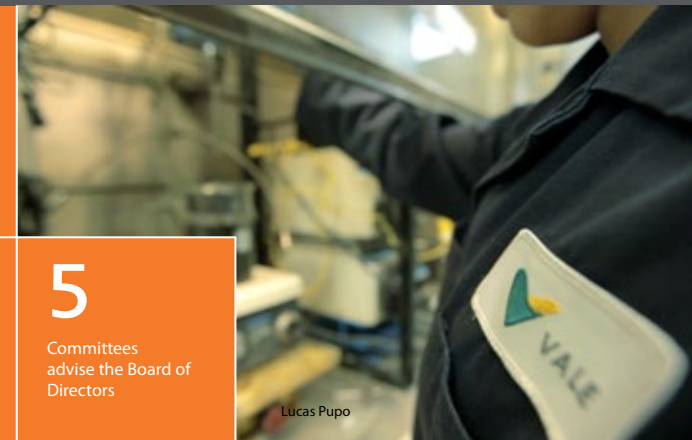
The governance model is based on transparency, stability and clarity of roles

7

Executive Boards have the task to implement the business strategy

5

Committees advise the Board of Directors



Lucas Pupo

General Shareholders' Meeting

- Annual and extraordinary meetings, when called by the Board of Directors. In 2015 there were two meetings.
- The means by which minority shareholders can express their opinion on the subject matter presented by the Board of Directors.

Board of Directors (CA)

[G4-37](#) | [G4-38](#) | [G4-39](#) | [G4-40](#) | [G4-42](#) | [G4-44](#)

[G4-45](#) | [G4-46](#) | [G4-47](#) | [G4-51](#) | [G4-53](#)

- Responsible for drafting general guidelines and policies, reviewing plans and projects proposed by the Executive Board and evaluating results.
- It has the power to appoint and dismiss those responsible for internal auditing.
- Composed of 11 members and ten substitute members, such as chairman, vice-president, a member and their substitute member elected by the employees, as well as an independent member.¹
- None of its members play an executive role within the company.

- Mandate of two years and fixed-sum remuneration of members – those with recognized qualifications in the areas of finance, capital markets, corporate governance, mining and mineral sales, and sustainability.
- The Board meets on a routine basis every month, and on an extraordinary basis when called by the chairman, vice-president, or any other two members. In 2015, the Board of Directors met 15 times.
- Board decisions require a forum that represents the majority of its members, and decisions are taken on a simple majority vote.
- Board members are not subject to a formal self-evaluation process.
- In February 2016, the then Chairman of the Board of Directors, Dan Antonio Marinho Conrado, was replaced by Gueitiro Matsuo Genso. Conrado remains on the Board as a regular member.

Executive Board

- Has the task of implementing the business strategy determined by the Board of Directors, developing plans and projects and also responsible for the company's operational and financial performance.
- It is comprised of a Chief Executive Officer (CEO) and seven executive directors, responsible for: Capital Projects, Logistics and Mineral Exploration; Finance and Investor Relations; Ferrous; Fertilizers and Coal, Base Metals; and Human Resources, Health and Safety, Sustainability and Energy. [G4-36](#)
- Its members are nominated by the Chief Executive Officer and elected by the Board of Directors. Executive Directors and other company executives receive bonuses and incentive payments insofar as they meet individual and collective goals to achieve the company's strategic results, related to financial, operational/technical and sustainability indicators.

Board members' curricula can be viewed at www.vale.com (About Vale/Leadership/Board of Directors and also in the Annual Report – 20-F).

Executive Board members' curricula can be viewed at www.vale.com (About Vale/Leadership). More information is available in the Reference Form, on the same website address, and also in the Annual Report – 20-F.



¹. In case of any vacancy arising for the post of member or substitute member, a temporary member may be appointed by the other members to serve until the next shareholders meeting, when the election shall be held.

Fiscal Council

- This body has the task of overseeing the company's management activities and reviewing the financial statements.
- It is a permanent council and also performs the role of Audit Committee for North American laws².
- It is made up of five members and four substitute members, none of which form part of the Board of Directors or the Executive Board.

Advisory Committees [G4-43](#) | [G4-48](#) | [G4-49](#)

- Provide support for the Board of Directors in conducting its business.
- There are five: Executive Development; Strategic; Finance Development; Accounting; and Governance and Sustainability.

² Exchange Act Rule 10A-3.

³ Vale is also part of the Extractive Industry Transparency Initiative (EITI) Coordinating Committee in Mozambique and Peru (subnational level).

⁴ New structural evaluations will be performed periodically or whenever detected the necessity for adjustment in the practices of a particular business area or group of the company.

Benchmarking of other ombudsmen and responsible areas for ethics in their companies verified that Vale is aligned with good practices

Commitments

Ethics and transparency

Vale's Code of Ethics and Conduct was updated in 2013, in alignment with the company's values, reinforcing its commitment to ethical behaviour, presenting a concept of conflict of interest, a description of the conduct expected by employers, and types of behaviour that are not tolerated and which are subject to disciplinary measures. In 2016, Vale will begin a review of its Code of Ethics aiming at an updated version in 2017. Since 2006, the effectiveness of internal controls is evaluated by the company's management and attested by independent auditors, as per the terms of the Sarbanes-Oxley Act (SOX). [G4-41](#)

The Ombudsman Service was created in 2013, reporting directly to the Chairman of the Board of Directors, having the responsibility to provide information to the Fiscal Council and the Governance and Sustainability Committee. The area has the task of continually improving awareness of ethical behaviour and guaranteeing its internal and external public audiences a proactive communication channel, which is transparent, independent and impartial in the treatment of complaints. In 2015, benchmarking of other ombudsmen and responsible areas for ethics in their companies, and it was verified that Vale is well aligned with the good practices in the market.

From December 2014, the company began to independently support the Extractive Industry Transparency Initiative (EITI),³ a voluntary initiative to promote transparency in financial flows between extraction companies and the governments in the countries where they operate. Still under the EITI, Vale participates in coordinating committees in Mozambique, Peru and Indonesia. The company is also a signatory of the Business Pact for Integrity and Against Corruption, created by the Ethos Institute, in agreement with the Office of the Comptroller General (CGU) and the United Nations Office on Drugs and Crime (Unodoc).

In the last few years, various countries where the company operates have established new laws related to corruption and bribery, with a broader range and scope than the U.S. Foreign Corrupt Practices Act (FCPA). In 2012, Vale's anti-corruption and anti-bribery standards and procedures were improved to also include these new legal requirements.⁴ In this context, the company maintains a Global Anti-corruption Program which, among other initiatives, gave rise to alterations in its Code of Ethics and Conduct to reinforce the content therein related to this theme. In addition to the Code of Ethics and

2016

Year of applying to all employees the online training on anti-corruption



Marcelo Coelho

2,700

participants in six countries in training for mitigation of corruption risk



Moisés Euzébio de Oliveira

Conduct, the program is composed of a Global Policy and a Global Anti-Corruption Manual, with clear rules on the provision and receipt of gifts and hospitality, political and charitable donations, investments in communities, sponsorship, relationship actions, third-party hiring, mergers, acquisitions and joint ventures and the selection and remuneration of employees and directors, among others. There are teams dedicated to enforcing compliance to this program in Brazil, Canada, Mozambique, Indonesia and Singapore, covering all the various activities across five continents. [G4-S03](#)

In 2014, 90% of Vale's workforce signed the Code of Ethics and Conduct, which now reinforces the provisions related to corruption and bribery. This action continued throughout 2015, with the Movement for Integrity – an event which has the objective of conveying the importance of one of Vale's core values with the message "Do what is right", focusing on the Code of Ethics and the Global Anti-corruption Program. The CEO, the General Consulting and the General Ombudsman were present at the movement inauguration, passing the message to leaders, who have now the responsibility to promulgate this information to all employees. In 2015 the focus was in-class training of individuals considered a priority for the mitigation of corruption risk (for example, areas responsible for government employee relations, the hiring of outsourced companies and intermediaries, donations, sponsorship and investment in communities, and company acquisitions), which involved 2,700 participants in the following countries:

- Australia (Perth)
- Brazil (Rio de Janeiro, Itaguaí, Belo Horizonte, Itabira, Barão de Cocais, Nova Lima, Vitória, São Luís, Brasília, Belém, Marabá, Carajás, Açailândia and São Paulo)
- Canada (Toronto and Manitoba)
- China (Peking and Shanghai)
- Singapore
- Korea
- Dubai
- India
- Indonesia (Jakarta and Sorowako)
- Japan
- Malawi (Blantyre)
- Malaysia (Lumut)
- Mozambique (Maputo, Nampula and Tete)
- New Caledonia
- Oman
- Taiwan

Mandatory online anti-corruption training was also developed for all employees. The training must be carried out by the end of 2016. The rules established in the Policy and the anti-corruption Manual were also published internally, and improvements were implemented to the controls which must be respected by all staff of the business units and subsidiaries. [G4-S6](#) | [G4-S7](#) | [G4-S8](#) | [G4-S04](#)

Ethical awareness [G4-50](#)

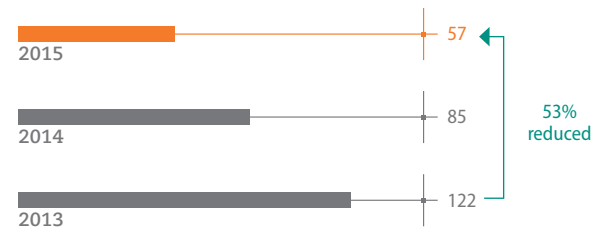
Created two years ago, the Ombudsman has achieved important results. These include the creation of the Ethics Committee, composed of the General Ombudsman, General Auditor, director of Human Resources and General Consulting; the development of regular reports to be sent to the Board of Directors, directors and employees, lending more transparency to the process;⁵ the carrying out of research on Ethics and the Ombudsman service, initially implemented in Brazil and expanded to Canada and Mozambique in 2015; the Movement for Integrity; the creation of online training on the Code of Ethics, which will be made available to all employees in 2016; the addition of a Code of Ethics video to provide orientation for new employees, and in the mobilization of service providers; and the creation of a televised soap opera in simple language which every two months covers a topic about ethics to be discussed among employees.

The improvements in the process for dealing with the complaints reduced the response time by 53% for the complainant, compared to 2013; and 33% compared to 2014. For confirmed complaints, analyses of vulnerability and risk are carried out, with a corrective action plan being drawn up to include initiatives for the mitigation of the risks identified. In addition, the categorization of complaints received was refined, for example permitting identification of cases of discrimination.

⁵ Contact Us, Human Resources and Railway Hotline, for example.

Average response time

(Days)



The Ombudsman may also receive complaints referring to the infringement of any rules or conduct guidelines described in the Code of Ethics, such as harassment, discrimination, improper use of resources, inappropriate behaviour, fraud, bribery, corruption, conflict-of-interest, infringement of environmental legislation or health and safety procedures, among others. This channel can also be used to deal, in the second instance, with questions that have not been resolved by other means.

There are different ways to contact the Ombudsman, such as an electronic form, regular mail, e-mail and telephone, as well as the possibility of making a personal appointment with the ombudsman. With exception for the last one, the channels are operated by an outsourced company, which is specialised in dealing with confidential cases, ensuring the confidentiality of the process and the anonymity of the complainant. In 2015, Vale hired an additional operator exclusively for dealing with telephone calls originated in Brazil, in order to provide a better service to Brazilian users. [G4-EN34](#) | [G4-LA16](#) | [G4-HR12](#) | [G4-SO11](#)

33%

Ombudsman's response time reduction to complainants compared to the previous year

During the year, there were no cases of corruption (active or passive) recorded involving Vale's employees with civil servants or government representatives. There were 21 cases of corruption in the private sector confirmed (not involving government employees and/or government authority), in which four cases resulted in the dismissal of employees and the termination of the supplier relationship; while in 11 cases, only dismissal resulted. For the other cases, risk mitigation measures were taken, such as process changes or warnings. In total, 56 employees were dismissed for involvement in private-sector corruption cases, while six companies had their relationship with Vale terminated. None of these cases were related to possible irregularities or improprieties in the accounting records or internal controls. [G4-SO5](#)

With respect to instances of discrimination in the workplace, in 2015, nine lawsuits were filed and remain ongoing. Through the Ombudsman Department, eight cases of alleged discrimination were recorded, with only one of these being confirmed (referring to discriminatory comments made by a student trainee on one social media). The Ombudsman, with support from the Human Resources Department, receives and deals with cases of discrimination through interviews with the parties involved, peers and managers. After the results of the investigations, corrective measures are adopted, including training of employees, disciplinary action, such as warnings or punitive (dismissals). [G4-HR3](#)

Achievements

Of all the initiatives undertaken in 2015 related to ethics, Ethics Agenda is highlighted. It was established by the Ombudsman, in partnership with the Communication Department, to take to the leaders issues related to ethics to be discussed with employees bimonthly. The five themes discussed were: Conflict of Interest, Prejudice, Misuse of the company's resources, Corruption and Gift and hospitality.

In order to increase Ombudsman representativeness in Vale, in 2015 it was also created the Ombudsman Network. Composed of 35 members distributed in different operation in Brazil, their mission is to become the focal point of ethics in their area, helping to maintain a clear communication between the Ombudsman and the operation and bringing improvements to internal processes. Similar to Ombudsman Network, in 2016 the company will create the Correspondents of Ethics directed to operations abroad.

Commitment to human rights

Vale has adopted the UN's Guiding Principles on Business and Human Rights and uses these as a reference for its Human Rights Policy. In accordance with the company's evolution of its practices, in 2015 aspects related to Vale's operational risk management model were added. As a result, the model began to take into account social and human rights events, replacing the Human Rights Violation Matrix of Risk in use until then.

Also established, as part of the the Integrated Health & Safety and Environmental Management System, were requirements referring to the management of social impacts and dealing with allegations of human rights violations. In 2015, the company continued to advance with the survey about risks on human rights of its operations when beginning the process on the Carajás Railway.

Using the strategic panel for risk management of human rights violations, locations most subject to possible violations were identified. Vale's operations and projects are mainly based in regions with a high risk of forced or child labour. For its own employees, the risk of these practices and the exposure of young people to hazardous work is non-existent. This is because Vale adopts a strict approach in its hiring procedures and in controlling access to its premises.

In regard to its chain of suppliers, in 2015 approximately 50,000 contracts were signed with companies operating in 60 different countries.⁶ More than half of these service providers operate in Brazil – country classified as carrying an extreme risk of forced labour or working conditions analogous to slavery, which emphasises the need for Vale to strengthen its control measures. The Suppliers Code of Ethics and Conduct, which is signed by suppliers at the time of hiring, contributes by emphasizing Vale's principles and values and prohibition of child or forced labour, or working conditions analogous to slavery.

⁶ For contracts with service providers, the country considered is that in which the contract was signed. For suppliers of materials and equipment, the supplier's country of origin is considered.



Paulo Moreira

Vale created the
Ombudsman
Network to keep
a focal point
of ethics in
operations


35 members
compose
the project

In 2016, the
initiative will be
extended to other
countries



Moisés Euzébio de Oliveira

**50,000
contracts signed
in 2015 with
companies
operating in
60 different
countries**

In addition to this, since 2010, the company has inserted a sustainability clause in its contracts with suppliers in Brazil, specifying the requirement to comply with its Supplier Code of Ethics and Conduct and promulgate the values contained in its Sustainable Development Policy and Human Rights Policy.

At the moment of registering service providers hired on its premises, the company checks to see whether legal obligations have been met, and whether there are obligations pending with either the INSS (Brazilian social security system) or the Guarantee Fund for Length of Services (FGTS in Portuguese). Any prospective suppliers for whom irregularities have come to light, and who show unwillingness to resolve them, are refused registration. Those hired have their performance regularly evaluated for compliance with legal labour obligations.

The monitoring of the so called blacklist from the Ministry of Labour and Employment (MTE in Portuguese) is also part of the supplier registration process. However, searches on this list have been suspended as a result of an injunction granted by the Federal Supreme Court, blocking the list's publication. In cases where information in the official domain confirms a connection by any supplier with slave and/or child labour, ceasing business with the supplier is considered. [G4-HR5](#) | [G4-HR6](#)

In 2015, there was one occurrence related to compulsory labor and another one related to child labour involving Vale's suppliers. The company received notice of violation after inspection of MTE for supposed irregular outsourcing and submitting workers of Ouro Verde to working conditions analogous to slavery.

The activity on the building site was halted, and resumed after Vale notified the provider of finished good transportation in Mina do Pico, Minas Gerais, and the necessary corrections were made. Vale also signed a term of commitment with the MTE reinforcing its intention to strictly comply with corrective measures to guarantee labor rights of its suppliers employees.

For the company, even though the working conditions of Ouro Verde's employees are the responsibility of that company, classification of these irregularities as "working conditions analogous to slave labour" is unfounded, considering that all Ouro Verde's employees had been duly registered, their salaries were up to date, their operating trucks were already equipped with air conditioning, and adequate and safe transport was being provided daily to and from their homes. The other case refers to the checking for the occurrence of child labour in car washes and vehicle workshops, used by some of the Vale's suppliers, in the municipalities of Canaã dos Carajás and Parauapebas, in the Southeast of Pará (Brazil). To deal with this, Vale, which normally takes action to guarantee that its production chain is not involved in situations of this type, promoted two workshops during the year for updating the status of action plans developed by suppliers in the region, which also had local Public Authorities participation.

Vale expressly repudiates any and every type of disregard for human rights and decent working conditions, and has been adopting measures to remedy such situations and ensure that such an occurrence is not repeated in any of its projects or operations.

2010

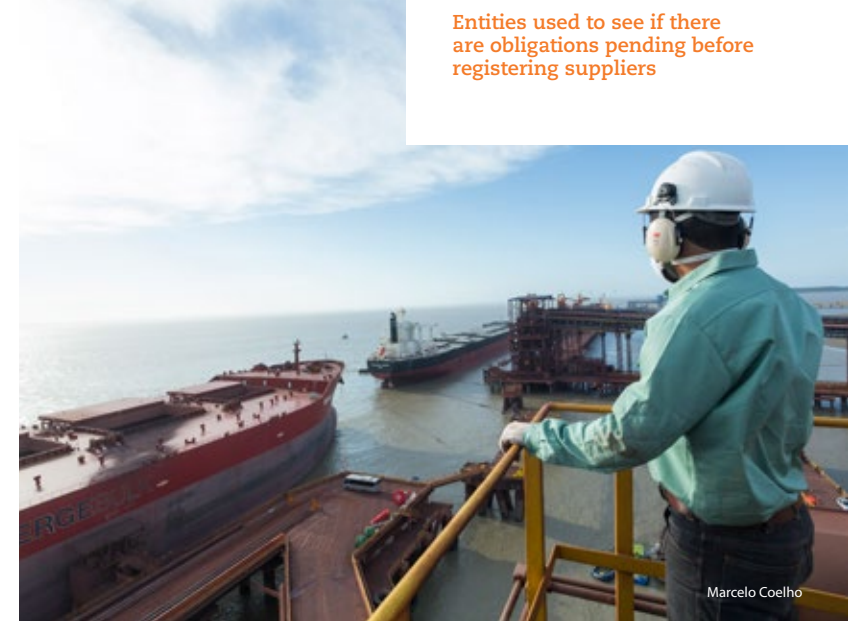
Year in which Vale started to include in contracts with suppliers national sustainability clauses



Maurício Moreira

INSS and FGTS

Entities used to see if there are obligations pending before registering suppliers



Marcelo Coelho

Mechanisms of dialogue [G4-18](#) | [G4-24](#) | [G4-25](#) | [G4-26](#)

Development is only sustainable when it generates and shares value with its stakeholders. Vale considers social development, environmental protection and quality of life of its employees as a priority, and also invests in technological innovations in line with sustainable development. To do what is right requires constant dialogue with different stakeholders. In this regard, the company has provided the following communication tools, consultation and dialogue:

Communication channels	Public audiences (stakeholders)						
	Shareholders, debenture holders and investors	Clients	Employees	Suppliers	Communities	Government & civil society	Press
20-F Reports, press releases, call notices and AGM/EGM meeting minutes, quarterly reports, reference forms	X	X					X
Visits to operations	X	X		X	X	X	X
Meetings	X	X			X		
E-mail: rio@vale.com	X						
Telephone number 55-21-3485-3900 (IR Department)	X						
Ombudsman	X	X	X	X	X	X	
Investor relations department at www.vale.com	X						
App for iPad – Vale Investors & Media – App Store	X						X
Campaigns		X	X		X		
Special events		X	X				
Satisfaction surveys		X					
Speak to Us		X	X		X		
Interactive daily newsletter			X				
Monthly printed newsletter			X				
Noticeboard journals			X				
Intranet			X				

Communication channels	Public audiences (stakeholders)						
	Shareholders, debenture holders and investors	Clients	Employees	Suppliers	Communities	Government & civil society	Press
Global Employee Survey ^I			X				
Communication Committee			X				
Social networks			X		X		
Exchange programs				X			
Structured meetings and collaboration workshops		X	X	X			
Ariba Portal ^{II}				X			X
Conference calls		X	X	X			X
Telephone numbers and e-mails		X	X	X			X
Supplier area on www.vale.com				X			
Committees for communication inter-change					X		
Social diagnoses					X		
Socio-economic diagnoses					X		
Public hearings					X		
Social dialogue					X		
Leadership Meeting Program					X		
External disclosure – News					X		
Alô Ferrovias (railway hotline)					X		
Contact with Community Relations team					X		
Contact with other areas					X		
Participation in associations and entities						X	
Participation at conferences, forums and debates						X	
Press interviews						X	X
Pressroom							X
Webcast							X
Visits to the newsrooms							X
Conversation circles							X

^{I.} Quantitative study conducted by the Human Resources Department to all employees of Vale.

^{II.} The e-marketplace portal with suppliers, in which procedures are performed, such as certification and payment information.

Relationships with Public Authorities G4-SO6

Due to the sheer size of its operations and because of the heavy investment involved in its projects, Vale maintains a continuous dialogue with government bodies, with a preference towards institutions and professional associations, aiming to play a proactive role in the formulation of public policies, seeking to understand their point of view, in order to establish or maintain a favourable environment for the mining sector. The company also encourages, and enters into, partnerships with government institutions, and also companies and civil organisations in order to maximise potential socio and economic development in regions where it operates.

With regards to the activities of political parties, the company is impartial and strictly complies with the legislation of those countries in which it is present. Vale's employees have the freedom to participate in these activities as long as their actions and opinions do not interfere with the company's position. Vale does not make donations to political campaigns – and indeed the passing of Brazilian law No. 13,165, on September 29, 2015 has forbidden this practice on the part of corporations and companies.

Reporto Extention

The Tax Regime to Incentivise Port Structure Modernization and Expansion (Reporto being the acronym in Portuguese) is a tax benefit that is essential for investment in the Brazil's infrastructure. Under this regime, the following taxes are suspended on purchases made in the

domestic market: Tax on Industrialised Products (IPI), Contribution to PIS/PASEP and Contribution for the Financial of Social Security (COFINS). For imports, taxes on IPI on imports, Contribution to PIS/PASEP – Imports COFINS – Imports, are only suspended on machinery and equipment and other goods that do not have a domestic equivalent.

In October, this benefit was extended to 2020, after meetings between entities connected to the industry, in which Vale participates, and the Ministry for Development, Industry and Trade, the State Department, the President's Office and the National Congress.

Regulation of pilotage

In 2015, the Commissions for Labour, Administration and Public Service, and Economic Development, Industry and Trade, approved Bill No. 2,149/2015, in Brazil, which alters the rules for pilotage service. It determines, among other aspects, that the prices charged, currently in accordance with a table of prices drawn up by the maritime authorities, can be subject to free negotiation. Only in the event of a lack of agreement between the parties that puts continuity of the operation at risk, can the price be set by the maritime authorities on an exceptional and temporary basis. The approval of this bill by the two commissions was the result of work by various entities connected to the port sector (CNI, ABTP, AEB and ATP) in negotiations with the Legislative Powers. Vale acted through these various bodies. The bill is currently being analyzed by the Roads and Transport Commission, and both Vale and the sector bodies will be continuing to monitor its progress.

⁷. Equivalent to R\$506,000 using an exchange rate of R\$3.16.



Dario Zalis

Engagement reduces oil consumption and avoids costs

As a way of reducing production losses and wastage, the Floor Management Development System (FMDS) was introduced in the mining operation at the Taquari Vassouras Complex, in Rosário do Catete, Sergipe. This tool provides support for routine management – exposing problems and developing and engaging internal teams to come up with solutions for the gaps detected.

Based on a training plan for the implementation of this initiative, 1,100 hours of training were given, with the resulting involvement of operators and maintenance technicians in the application of over 300 *kaizens* (small improvements) to their activities. Thus, it proved possible to reduce annual consumption of hydraulic oil by 29%, avoiding a cost of around US\$160,000⁷ and raising the number of working hours by 22.8%. This saving of resources and time contributed to a year-on-year increase of 13.8% in run-of-mine (ROM), in other words gross production handled in 2015.

State Goods and Services Tax (ICMS)

A series of bills are going through the Brazilian National Congress which seek to amend Supplementary Law No. 87/96 (Kandir Law), which establishes the general standards for Tax on the Circulation of Merchandise and the Providing of Services (ICMS), with a view to revoking its non-levy on the export of primary products.

Among the various aspects, of particular note is Bill No. 11/2011, which seeks to establish the levy for State Goods and Service Tax (ICMS in Portuguese) on the export of non-renewable primary products. After claims by various entities representing the primary product export sector, the Bill was rejected in 2015, by the Commission for Economic Development, Industry and Trade, and is currently before the Finance and Tax Commission, with a report recommending its rejection. Vale acts through a number of sector entities (CNI and IBRAM), the actions of which will continue in 2016.

Institutional partnerships

G4-15 | G4-16

Vale's participation in forums, institutions and in other commitments and initiatives, is a way of keeping itself in alignment with mega-trends in sustainable development and political-institutional themes of its interest and operational sector, as well as knowing good practices and exchanging experiences between companies. The company is either a signatory or a part of the following:

Columbia Center on Sustainable Investment (CCSI) | CCSI aims to promote an agenda of sustainable development through partnerships with investors, academia and government, reaffirming

the essential role played by responsible investors. Vale is a founding member and main sponsor.

United Nations Global Compact | Since 2007, the company has been a signatory and respects the Compact's 10 key principles.⁸ At the invitation of the UN, the company has been part of the Global Compact Lead platform since 2010, which brings together leaders of organizations on questions of sustainability, already being covered by the Global Compact initiative.

Business and Industry Advisory Committee to the OECD (BIAC) | The company monitors and participates on a number of significant committees, such as those for Raw Materials, Corporate Governance, Sustainable Development, Environment and Energy and Trade. In addition to this, through the Organization for Economic Cooperation and Development (OCDE), it forms part of committees such as the Steel Committee, and working groups, such as that for Policy Dialogue on Natural Resource-Based Development, and the Advisory Group on Stakeholder Engagement and Due Diligence in the extractive sector.

World Business Council for Sustainable Development (WBCSD) | Vale collaborates with the development of the WBCSD project Action 2020, whose objective is to indicate ways for companies to play their part in the challenge to achieve a sustainable planet by 2050. In 2015, the main focus was on work groups covering climate change, ecosystems, talent and employment, and basic needs and rights.

Sustainable Development Solutions Network

(SDSN) | The company is part of the Executive Committee and Leadership Committee, and participates in group discussions on good governance in Extractive Resources and on Biodiversity. In 2015, it contributed to the role the network played in drawing up the United Nations Sustainable Development Goals.

Brazilian Mining Institute (IBRAM) | The company participates in this Institute through a number of programs and initiatives promoted by the Institute and other partners in order to promote the sustainable development through studies, manuals, guides, research, innovation and the use of modern technology.

⁸. The indicator index in this report presents the correlation between the principles of the Global Compact and Vale's practices and performance.

CNI and IBRAM

Entities in which Vale acted to the non-levying of the so-called Kandir Law, that exempts exports of primary products from the ICMS

Organizations and associations

Global

- Centre National de Recherche Technologique Nickel et Son Environnement (CNRT Nickel).
- Columbia Center on Sustainable Investment (CCSI).
- International Chamber of Commerce (ICC).
- United Nations Global Compact.
- Business and Industry Advisory Committee to the OECD (BIAC).
- Reputation Institute.
- The Nickel Institute.
- The Cobalt Development Institute.
- World Business Council for Sustainable Development (WBCSD).
- Sustainable Development Solutions Network (SDSN).
- Global Fund to Fight Aids, Tuberculosis and Malaria (Global Fund).
- The Extractive Industries Transparency Initiative (EITI).
- Inter-Governmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF).

Regional

- Brazil-Canada CEOs Forum.
- BRICS Business Council.
- European Association of Metals (Eurometaux).
- European Steel Association (Eurofer).
- Latin America Iron and Steel Institute (Ilaifa).

National

- Brazilian Association of Science (ABC).
- Private Port Terminals Association (ATP).
- Brazilian Foreign Trade Association (AEB).
- Brazilian Study Centre for International Relations (CEBRI).
- National Confederation of Industry (CNI).
- Brazilian Business Council for Sustainable Development (CEBDS).
- Brazil-China Business Council (CEBC).
- Brazilian Mining Institute (IBRAM).
- The Mining Association of Canada (MAC).
- The Indonesian Mining Association (IMAC).
- Brazilian Rail Transport Association (ANTF).
- Ethos Institute for Business and Social Responsibility.
- Queensland Resource Council.
- NSW Minerals Council.
- Global Compact Brazilian Committee (CBPG).

Sustainability KPI⁹ G4-EN6

Vale's variable remuneration program is based on indicators of economic-financial performance, operational excellence and sustainability, linked to continuous improvement.

The Sustainability indicators cover aspects such as water, energy, emissions, residues, recovery of degraded areas, as well as indicators related to social questions at the operational units. The classifications have not been altered and remain on a scale of point varying from 0 to 125, as follows:

- **Challenge reached:** corresponds to results equal to 125 points.
- **Target reached:** corresponds to results equal to or above 100 points.
- **Target partially reached:** corresponds to results equal to or above 50 points (up to the limit stated of 100 points).
- **Target not reached:** corresponds to a result below 50 points.

⁹. Key Performance Indicators.

Vale's participation in forums, institutions and in other commitments and initiatives is a way of keeping itself in alignment with mega-trends

Vale is a part of 12 international entities

Vale is also part of 14 organizations that operate in Brazil

Malaysian Nature Society

Salviano Machado

125 points

A number that represents the status of "challenge reached" within the Sustainability KPI

The units which partially achieved their goals or those that failed to reach their goals, for various reasons, will seek to achieve their goals for the next year, taking into account the new scenario of austerity, definition of business strategy and sustainability guidelines. Performance results are shown in the table below.

Key

- Challenge reached (=125)
- Target reached (≥ 100)
- Target partially reached (≥ 50)
- Target not reached (< 50)

Business area	Indicators	2015 results	2015 results (average variation compared to 2014)
Iron Ore and Pellets	G4-EN3 – Energy consumption within the organization (fuel)	●	4% reduction in two sites
	G4-EN3 – Energy consumption within the organization (electricity)	●	1% reduction in two sites
	G4-EN21 – NOx, SOx and other emissions	●	4% increase in one site
	G4-EN23 – Generation of dangerous waste	●	20% reduction in one site
	Water demand	●	New indicator for five sites
	RAD – Recovery of Degraded Areas	●	Target maintained (100% reached under the Recovery of Degraded Areas Plan) in three sites
Copper	Significant social initiatives	●	Action plan of the year
	G4-EN3 – Energy consumption within the organization (fuel)	●	11% reduction in one site
	G4-EN3 – Energy consumption within the organization (electricity)	●	6% increase in one site
	G4-EN23 – Generation of dangerous waste	●	18% reduction in one site
	G4-EN23 – Waste disposal	●	New indicator for one site
	Water demand	●	New indicator for one site
	Relevant social initiatives	●	Action plan of the year

Business area		Indicators	2015 results	2015 results (average variation compared to 2014)
Nickel	North Atlantic	G4-EN3 – Energy consumption within the organization (fuel)	●	4% reduction in one site
		G4-EN3 – Energy consumption within the organization (electricity)	●	2% increase in one site
		G4-EN8 – Total water withdrawal by source	●	4% reduction in one site
		G4-EN13 – Biodiversity	●	New evaluation metric
		G4-EN22 – Total water discharge	●	5% increase in one site
		G4-EN23 – Generation of dangerous waste	●	11% reduction in one site
		Relevant social initiatives	●	Action plan of the year
	South Atlantic	G4-EN3 – Energy consumption within the organization	●	New indicator for one site
		G4-EN23 – Generation of dangerous waste	●	New indicator for one site
		Water demand	●	New indicator for one site
		Relevant social initiatives	●	Action plan of the year
	Asia-Pacific	G4-EN3 – Energy consumption within the organization (fuel)	●	34% increase in one site
		G4-EN3 – Energy consumption within the organization (electricity)	●	New indicator for one site
		G4-EN8 – Total water withdrawal by source	●	34% reduction in one site
		G4-EN21 – NOx, SOx and other emissions	●	5% reduction in one site
		G4-EN23 – Generation of dangerous waste	●	New indicator for one site
		Relevant social initiatives	●	Action plan of the year
Coal		G4-EN3 – Energy consumption within the organization (fuel)	●	New indicator for two sites
		G4-EN3 – Energy consumption within the organization (electricity)	●	New indicator for two sites
		G4-EN21 – NOx, SOx and other emissions	●	17% increase in one site
		G4-EN21 – NOx, SOx and other emissions	●	New indicator for one site
		G4-EN23 – Generation of dangerous waste	●	New indicator for one site
		G4-EN23 – Waste disposal	●	New indicator for one site
		Relevant social initiatives	●	Action plan of the year

Business area		Indicators	2015 results	2015 results (average variation compared to 2014)
Fertilizers		G4-EN3 – Energy consumption within the organization (fuel)	●	16% reduction in four sites
		G4-EN3 – Energy consumption within the organization (electricity)	●	24% increase in four sites
		G4-EN8 – Total water withdrawal by source	●	13% increase in two sites
		G4-EN21 – NOx, SOx and other emissions	●	New indicator for one site
		G4-EN23 – Generation of dangerous waste	●	19% reduction in two sites
		Relevant social initiatives	●	Action plan of the year
Ports		G4-EN3 – Energy consumption within the organization (fuel)	●	18% reduction in one site
		G4-EN3 – Energy consumption within the organization (electricity)	●	2% reduction in one site
		G4-EN21 – NOx, SOx and other emissions	●	New valuation metric
		G4-EN23 – Generation of dangerous waste	●	78% reduction in one site
		Water demand	●	New indicator for one site
		Relevant social initiatives	●	Action Plan of the year
Logistics	Railways	G4-EN3 – Energy consumption within the organization (fuel)	●	7% reduction in one site
		G4-EN23 – Generation of dangerous waste	●	1% increase in two sites
		Water demand	●	New evaluation metric
		Relevant social initiatives	●	Action Plan of the year
	Shipping	G4-EN3 – Energy consumption within the organization (fuel)	●	New indicator for one site
		Management of ballast water	●	Result Maintained
Africa		G4-EN3 – Energy consumption within the organization (fuel)	●	17% reduction in one site
		G4-EN23 – Generation of dangerous waste	●	28% reduction in one site
		Water demand	●	New indicator for one site
		Relevant social initiatives	●	Action Plan of the year
General Services		G4-EN23 – Waste disposal	●	8% increase in one site

5,000

Number of consultations
carried out in 2015 by
Vale to subcontracting
companies to mitigate
risks to image and
reputation

Márcia Foletto

ISO 31000

Standards guide the
quarterly evaluation of
the Risk Management
Executive Committee

Marcelo Coelho

Risk management

Vale has a Corporate Risk Management Policy in place – aligned with the principles defined by the Board of Directors and Executive Board – which requires the measurement and monitoring of risk events that may have an impact on health and safety, the environment, society, as well as the company's reputation and finances. The risk management of Vale take in account the following:

- **Market:** market risk factors such as interest rates, currencies and commodity prices with potential impact on cash flow.
- **Credit:** risk of non-compliance of obligations by counterparties, such as clients, financial institutions, suppliers and others.
- **Operational:** potential losses caused by failures or substandard processes, human error, systems or external events, resulting in harm to people, the environment, property, society and the organization's reputation.
- **Projects:** possible impacts on the investment, project deadlines and safety, and the operational performance of the new installations.

The conduct of operations, as well as project feasibility analyses, take into account the Precautionary Principle in the management of corporate, environmental, social and health and safety risks. This applies to questions involving employees, subcontractors, communities close to the company's operations, and the environment. [G4-14](#)

Implementation of this policy is supervised by the Risk Management Executive Committee, also responsible for reviewing the principles and instruments used for managing risk at the corporate level, providing information to the Executive Board to assist it in its decision-making process. The Committee assesses the main risks involved on a quarterly basis, and their respective controls and action plans, using ISO 31000 standard guidelines. [G4-50](#)

In relation to Internal Control environment, Vale has a set of application controls, automated and of information technology that aim to monitor the control environment and to ensure the accuracy of the information disclosed in the financial statements, including provision for asset retirement, registration and execution of environmental liabilities, as well as, the monitoring of any environmental and social lawsuits and their contingencies.

In addition, since 2009 Vale has carried out due-diligence on outsourced companies in Brazil, to mitigate the risk of hiring or subcontracting companies considered disreputable, thus avoiding possible risks to image and reputation. In 2015, over 5,000 consultations were carried out, covering human rights, safety and corruption aspects, among others. Since 2013, this process has also been incorporated into the certification procedures for new suppliers, in the main countries where Vale operates. (See more information on Commitment to human rights and Ethics and transparency). [G4-2](#)

Legal compliance¹⁰ G4-S08

In 2015, Vale did not record new relevant civil, regulatory or tax processes.¹¹ The company registered 541 new significant lawsuits,¹² all of which are labour-related in nature, and four new relevant environmental processes.¹³ In this period, Vale was subjected to one sanctions of a non-pecuniary nature, and there was no payment of any significant fines.

In 2016, new significant lawsuits, which occurred until May of this year, were incorporated in the report.

Environmental¹⁰ G4-EN29

In 2015 four significant cases¹³ of environmental non-compliance were filed against the company, while 20 significant environmental cases were settled,¹⁴ with agreements being entered into. A non-financial penalty¹⁵ was also applied against the company. Among these cases, the following is of particular note: The company is involved in a number of cases referring to the bursting of the Samarco tailings dam in the village of Mariana, Minas Gerais. In March 2016, Samarco and its shareholders, Vale and BHP, entered into an agreement with the Union's Public Prosecutor's Office, with the state governments of Espírito Santo and Minas Gerais, as well as other authorities such as IBAMA, the Espírito Santo State Institute for the Environment and Water Resources (IEMA in Portuguese), and the Minas Gerais State Environment Foundation (FEAM in Portuguese), properly approved by the court, to set up programs and initiatives in light of the environmental and socio-economic impacts of the bursting of the Samarco dam.

In April 2016, Vale became aware of the new Public Civil Action that has been filed by the Federal Public Prosecutor (MPF in Portuguese) relating to the accident at the tailings dam of Samarco. This new action was

distributed because of Samarco, BHP Billiton Brasil Ltda. (BHP), Vale, the Brazilian Government, the states of Minas Gerais and Espírito Santo, the National Water Agency (ANA in Portuguese), the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA in Portuguese), the National Department of Mineral Production (DNPM in Portuguese), the Chico Mendes Biodiversity Institute (ICMBio in Portuguese), the National Foundation for Indigenous People (FUNAI in Portuguese), the National Sanitation Agency (ANVISA in Portuguese), the Institute for the National Historical and Artistic Patrimony (IFAN in Portuguese), the Brazilian National Development Bank (BNDES in Portuguese), the State Forestry Institute (IEF in Portuguese), the Minas Gerais Water Management Institute (IGAM in Portuguese), the State Environmental Foundation (FEAM in Portuguese), the Minas Gerais State Institute for Historical and Artistic Patrimony (IEPHA in Portuguese), the States Environmental and Water Resources Institute (IEMA in Portuguese), the Espírito Santo Agriculture and Forestry Institute (IDAF in Portuguese) and the State Water Resources Agency (AGERH in Portuguese), being shown the value of R\$155 billion (approximately US\$49.1 billion).

Vale clarifies that, according to the MPF complaint, the stated value is not based on the Samarco dam accident, but rather on an unjustified comparison with the Deepwater Horizon oil spill in the Gulf of Mexico. Vale also clarifies that Samarco adopted all the necessary emergency measures related to the accident and that studies and remedial measures of environmental and socio-economic nature are already in execution, as it was signed in agreement by Samarco, BHP and Vale with federal and state authorities of Minas Gerais and Espírito Santo.

A Public Civil Action was also filed in 2015 by the Federal Prosecution Office citing Vale and IEMA, with a request for the restoration of the Camburi beach, in

JUDICIAL

In the instance of power, the company seeks appropriate outcomes for socio-environmental issues

In 2015, apart from Samarco case, Vale was not sued for significant value in the civil sphere

DEAL

Samarco, Vale and BHP set commitment to AGU and government and entities in the states of Minas Gerais and Espírito Santo to adopt programs and actions in light of the impacts caused by Fundão's dam failure

Vitória, Espírito Santo state, the removal of iron ore from the sand and the suing of Vale for collective damages. The judge at that time responsible for the case decided that this case should be ruled upon in conjunction with the lawsuit filed by the National Association of Friends of the Environment (Anama in Portuguese) citing Vale. A decision is awaited by the new judge presiding.

The Secretary of State for the Environment and Sustainability from Pará (SEMAS in Portuguese), during an inspection conducted in Serra Leste Operation, fined Vale for alleged ore processing in breach of the time limit established in the Operating Licence for this project. In its defence, Vale stated that the activities were only for the testing of ore processing equipment. Due to the rejection of this initial defence, Vale opted to pay the fine, so bringing the case to an end.

¹⁰. In 2015 in order to comply with GRI methodology, the form of the sustainability report was altered. In this report, only cases initiated or resolved in 2015, which meet the applicable materiality methodology criteria will be reported. Cases prior to 2015, previously reported, will not be reported on again. In any case, in Vale's Report 20-F can be found a summary of all lawsuits which meet the materiality financial criteria, of 1% of the company's net equity, today ongoing.

¹¹. 1% of Vale's net equity, in accordance with that published in the 20-F Report, or for which the theme is considered either significant or had considerable repercussions.

¹². Cases involving an amount of over R\$1 million or US\$316,445.

¹³. Environmental processes are considered relevant based on at least one of the following criteria: a) value, including indemnity claims and fines up to R\$5 million, or US\$1.58 million; b) related to the company's interests or the public at large; c) cases that resulted in the interruption of activities.

¹⁴. The cases refer to agreement approval of a set of actions related to the dams.

¹⁵. Suspension injunction of Onça Puma mining activities, reported here.

In 2015, the Public Prosecution Office of Catalão, Goiás, filed a Civil Action against Vale Fertilizantes and two other defendants, because of complaints from the community about an unpleasant odour of unknown origin. Although there is no evidence to prove the origin of the odour, the Public Prosecution Office is seeking to place the blame on the fertilizer industry. The company has been defending itself against the accusations, having provided proof based on studies by renowned institutions, that this odour is unrelated to its activity.

On May 2016, the operation of a tailings dam of Vale Fertilizantes, set in the Araxá (MG), was suspended because of a formal irregularity in its licensing process. The company has standardized the situation with the environmental agency and the Public Ministry eight days after the operation, which gave them the opportunity to prove that there was no damage to the environment and that the dam operates with the necessary conditions of security and stability.

The company regrets the need to address socio-environmental issues in court and is committed to achieving an outcome in such cases most appropriate for the parties involved and for the environment.

Vale maintains discussions on legal sphere about various theses of its interest, but was not cited in tax-related cases initiated in the year

Civil

In 2015, other than the Samarco case related to Environmental Compliance, no other cases were initiated that meet the financial criteria of the report.

Regulatory

In 2015, no judicial or administrative lawsuits were initiated that meet the criteria of this report.

Tax

In 2015, no judicial or administrative lawsuits were initiated that, in isolation, meet the financial criteria of this report.

However, discussions were maintained on the following situations described, considered to be significant for the company.

- Levy of Corporate Income Tax (IRPJ in Portuguese) and Social Contribution on Net Income (CSLL in Portuguese) in relation to the profits earned by foreign affiliates and subsidiaries for the periods 1996 to 2002, and 2013.
- The company also contested the levy of State Goods and Services Tax (ICMS in Portuguese), in various administrative and judicial lawsuits, among which of note are (i) the dispute with the state of Pará, related to charges based on the calculation for ICMS, for the transfer of iron ore to Maranhão and (ii) the charging of ICMS supposedly chargeable on the inter-state transport of the company's own iron ore, by the state of Minas Gerais.
- Vale also contested demands for financial compensation for mineral extraction (CFEM) in various administrative and judicial lawsuits, regarding divergences in the interpretation of the applicable legislation, as well as the charging of PIS and COFINS relating to input credits.

- Vale also contested about the deductibility of CSLL from the IRPJ calculation base, in a Rescindment Action brought by the Federal Union.

Labour

In 2015, there were 541 judicial lawsuits which meet the materiality financial requirements of the report. Among these lawsuits, the following issues are worthy of note.

Legal arguments continued in Brazil on the payment of the Guarantee Fund for Length of Service (FGTS in Portuguese) requested by the Federal Union, incident on certain parts of payroll from 1999 to 2003.

Argument also continued with respect to: (i) fatal accidents that took place in the line of work; (ii) labour conditions (rest periods/temperatures), at the Taquari Vassouras potash mine, Sergipe; (iii) outsourcing of the fire planning activities, detonation, operation of excavators and drilling machines and the tailing dams monitoring activity in the mines in the state of Minas Gerais; (iv) hours in transit at Carajás (in this case, an agreement was reached which is in the implementation phase); (v) fine notices issued by the Ministry of Labour and Employment which considered that the working conditions of the workers for the company Ouro Verde, which provides a service for the transport of Vale's products, were analogous to slave labour. With respect to item (v), it should be pointed out that Vale signed a Term for the Adjustment of Conduct (TAC) with the Public Labour Ministry without recognising the existence of labour conditions analogous to slavery, for the adoption of measures to ensure the guaranteeing of labour rights for employees of service providers.

Unfair competition [G4-S07](#)

In 2015, no judicial or administrative lawsuits were initiated that, in isolation, meet the financial criteria of the report.

Business Perspectives

- Global Economic Scenario
- Results and Distribution of Added Value
- Investments
- Socio-Environmental Expenditure
- Regulatory Changes
- Environmental Licensing

Global economic scenario

The year of 2015 was marked by the improvement in the company's operating performance despite the challenges imposed by the continuing decline in commodity prices. In the first decade of this millennium, the Chinese economy was one of the growth drivers for the global economy, which led to a sharp increase in demand for mineral-based commodities, culminating in higher international prices and a consequent incentive to drive up production due to its profitability. Over the last few years, however, the mining industry has been hampered by intense periods of volatility. The metamorphosis of the Chinese economic model, based on investments and exports, into one with a different profile, with greater emphasis on the service sector and consumption, significantly contributed to lowering global growth rates. The greatest impact was seen in the real-estate sector, which along with infrastructure, represents almost 60% of China's steel consumption. After years of expansion driven by the emergence of a private real-estate market, rising family incomes, and government incentives, the rhythm of investment in construction industry declined.

All this movement gave rise, in 2015, to challenges and uncertainties particularly with respect to the continuing sharp decline in mineral-based commodity prices, specifically 42% in the price of iron ore, as a result of the global economic slowdown and the surplus of these commodities in the market. This created a new

paradigm within the industry, leading companies in the sector to implement structural change in the quest to increase productivity, manage their costs better and create value for investors.

Faced with this scenario, Vale continued to focus its business strategy on world-class assets and projects, which have the characteristics of low cost, abundant reserves, large scale and a greater resilience to volatile economic cycles.

It also continued in its quest to improve the use of its asset base, with a simpler operational model and a leaner structure. The company also intends to reach a level of excellence in the delivery of its projects, reducing project times and implementation costs, without jeopardising employee safety, with a transparent approach to stakeholders, while adopting sustainable practices throughout its value chain.

Results and Distribution of Added Value [G4-9](#)

The year 2015 saw a strong operating performance by the company, with annual and quarterly production records for iron ore, pellets, nickel, copper, cobalt and gold. For iron ore, production amounted to 345.9 Mt,¹ with a record being achieved in Carajás of 129.6 Mt. For basic metals, respective records were achieved of 291 thousand tons and 423.8 thousand tons, for nickel and copper. The base metals performance was the result of record annual nickel production at PTV, VNC and Onça Puma and record annual copper production

at Salobo. Gold production amounted to 420 thousand oz and cobalt production, 4.5 thousand tons – both of which are also annual records.

In parallel to this, expenses were again reduced, by US\$1.6 billion,² as a result of efforts to maintain the competitiveness of the mining industry, as well as efficiency and austerity measures. Sales, general and administrative expenses (SG&A), without depreciation, were reduced by 40.1% (US\$357 million) compared to 2014.

1. Excluding the production attributable to Samarco.
2. Does not include depreciation and amortization and includes one-off effects of US\$230 million of the goldstream transaction recorded in 1Q15 and US\$331 million adjustment in ARO in 4Q15.

345.9 Mt

Volume of iron ore production, with record being achieved in Carajás, of 129.6 Mt

Three capital projects (Cauê Itabiritos, Conceição Itabiritos II and the Port of Nacala) were completed in the period. In addition to this, there was an increase in operating efficiency in iron ore mining to the extent that, during the year, efficiency measures were captured from N4WS, with an improvement in the use of Adicional 40 in Carajás and the delivery of the Itabiritos projects, which ramp-ups were continued. In Canada, Vale celebrated the completion of Long Harbour ramp-up, which from the beginning of 2016, began to operate exclusively with material from the North Atlantic.

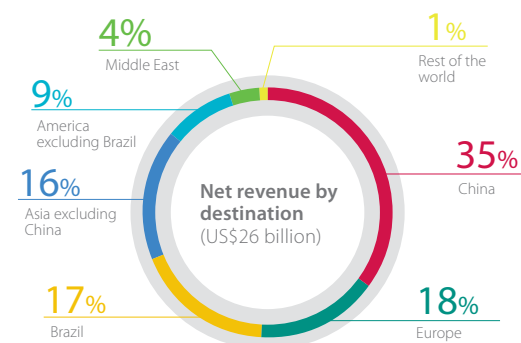
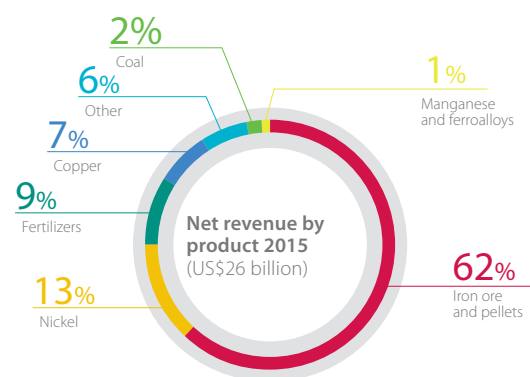
Meanwhile, investments were reduced by US\$3.6 billion during the year, and there was a disbursement of US\$1.5 billion in dividends, while at the same time preserving a healthy capital structure.

The net result was a loss of US\$1.7 billion, with operational cash generation, as measured by adjusted EBITDA of US\$7.1 billion, 47% less than the US\$13.4 billion reported in 2014, basically as a result of lower iron ore prices (-US\$10.7 billion) and base metal prices (-US\$2.2 billion. Lower costs and expenses partially compensated for the impact of lower prices, to the tune of US\$6.7 billion.

Generated and distributed value G4-9 | G4-EC1

(US\$ million)

	North America, except Canada	Canada	South America, except Brazil	Brazil	Europe	Africa	Australasia	Middle East	Total
Revenue	13	3,203	498	20,934	6	296	1,600	561	27,111
Direct economic value generated	13	3,203	498	20,934	6	296	1,600	561	27,111
Operational costs	139	2,585	763	12,613		902	1,726	1,244	19,972
Employees' salaries and benefits		811	107	1,714	3	15	225	67	2,942
Research and development		32	8	412	3	15	4	3	477
Payments to capital providers	333			9,358					9,691
Payments to the government		75	2	2,511	104	13	177	3	2,699
Resources invested in communities		7	0.45	193		21	7	0.1	228
Economic value distributed	472	3,360	876	26,801	110	940	2,139	1,311	36,009
Economic value retained	(459)	(157)	(378)	(5,867)	(104)	(644)	(539)	(750)	(8,898)



Summary of production

(in thousand metric tons)

	2014	2015
Iron ores ^I	331,556	345,879
Pellets ^{II}	55,020	58,510
Manganese ores	2,352	2,441
Coal	8,644	7,344
Nickel	275	291
Copper ^{III}	380	423.8
Cobalt	3.7	4.5
Gold (thousands of ounces)	321	420
Potassium	492	481
Phosphate rock	8,421	8,163
Ferroalloys	171	99
Platinum (thousands of ounces)	182	154
Palladium (thousands of ounces)	398	341

^I. Excluding the production attributed to Samarco.
^{II}. Including the production attributed to Samarco.
^{III}. Including the production attributed to Lubambe.

Investments by type

(US\$ billion)

	2012	2013	2014	2015	2016
Execution of projects	11.6	9.6	7.9	5.5	
Maintenance of operations	4.6	4.6	4.1	2.9	
Total	16.2	14.2	12.0	8.4	5.5

*Investment budget.

Investments

In 2015, investments (growth and maintenance) totalled US\$8.4 billion, a reduction of US\$3.6 billion compared to the previous year, principally as a result of disciplined allocation of capital, the delivery of projects, optimization of scope, and efficiency in the implementation of projects and currency exchange.

Most of the funds invested in ferrous metals referred to growth initiatives in the iron ore business, specifically expansion at Carajás and infrastructure related to the Itabirito project. The

Moatize II project also received investment, as did its associated logistics project, the Nacala Corridor.

For 2016, the capital investment plan was optimized and reduced to US\$5.5 billion, through the maintaining of discipline in the allocation of capital and the exclusive focus on world-class projects, for example, Moatize II, in Mozambique, and S11D, in Pará, in 2016.



Further information can be found on Investors section at www.vale.com



Paulo Moreira

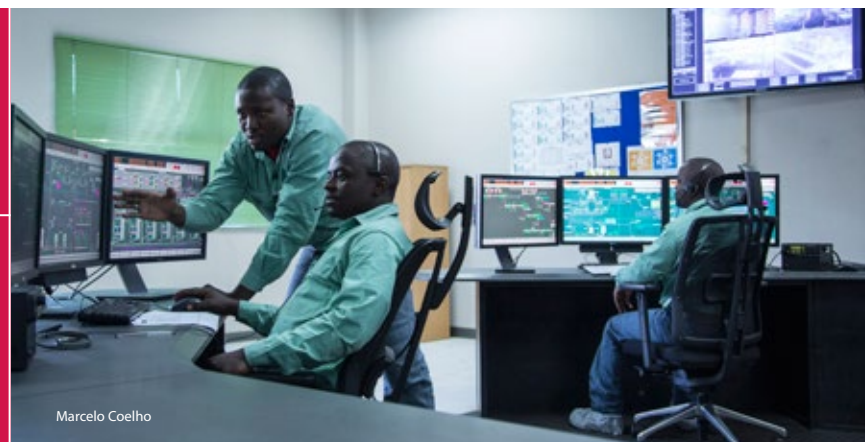
In 2016, investment plan was optimized and focused in projects such as...



Moatize II, in Mozambique...



... and S11D, in Pará, Brazil



Marcelo Coelho

US\$8.4 billion

was the total invested in 2015 by Vale in expansion and maintenance of its operations

Socio-environmental expenditure

G4-EC7 | G4-EN31

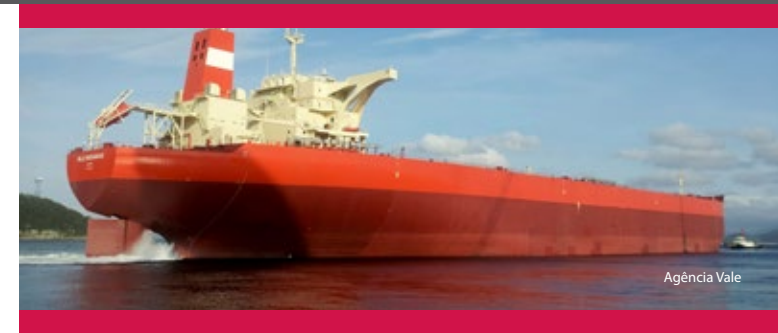
The drive for the simplification of Vale's corporate structure, the reduction of its assets and its project portfolio, resulted in changes to distribution of, and a reduction in, socio-environmental expenditure, compared to previous years.

Expenditure on environmental controls continued to be accounted: as socio-environmental expenditure, with the exception of the category Dams and Piles, investment (around US\$200 million) that started to be accounted under operational expenditure, which also contributed to reducing the amounts shown below.

The company concentrates its social expenditure on reducing discomfort in neighbouring

communities. It was invested US\$139.5 million in stock of impact management in 2015.

Social expenditure dedicated to local and territorial development came to a total of US\$82.5 million, including social and one-off investment with communities. Of the total of US\$228.1 million spent, 70% dealt with obligatory actions and 30% referred to voluntary social investment. Of the resources, US\$28.7 million to traditional communities and indigenous peoples, US\$43.1 million to education and US\$61.8 million to urban infrastructure and mobility, of which US\$34.6 million were invested in construction of viaducts that offer much more security to the neighboring communities of the railways.



World's largest port – the result of investment in shared value

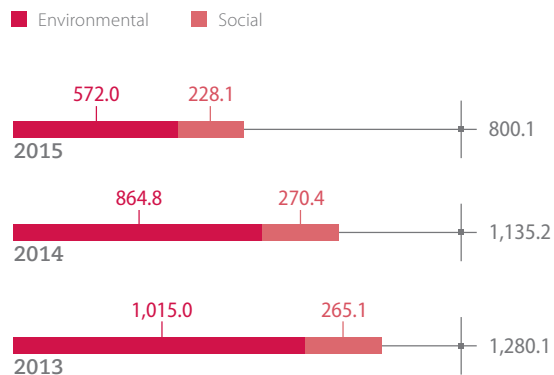
Celebrating 30 years of operation in 2016, the Ponta da Madeira Maritime Terminal (TMPM in Portuguese) has evolved steadily over the years, thanks to the commitment and dedication of its employees and service providers. The leader in terms of cargo handling in Brazil, Ponta da Madeira is undergoing capacity expansion works to cope with the increase in production from S11D, that will transform Ponta da Madeira into the world's largest port.

Its current loading capacity is 150 million tons/year, but in 2018 this will reach 230 million tons/year – a cargo handling level which will be reached in various stages of matching the capacities of the mine, the railway and the port. By the end of 2015, the expansion works will be almost 70% complete – they include expansion both onshore and offshore, as well as expansion to the railway terminal located in the Ponta da Madeira terminal.

Modernity is the highlight of the installations. The iron ore stockyard is equipped with the largest and most innovative ore-stacking and recovery machines in Latin America. There are 13 pieces of equipment in all, including the world's largest forklift truck, for its handling capacity of 16 tons/hour and simultaneously discharging of two rotators, as well as two ore recovery machines equipped with an automatic system that generates 3D images of the stockyard.

Socio-environmental expenditure

(in US\$ million)



Principal types of socio-environmental expenditure

(in US\$ million)

Water resources	161.0
Atmospheric emissions	132.4
Recovery of degraded areas and contaminated areas	83.3
Residues	78.4
Environmental conservation	55.0
Environmental management	17.8
Environmental risk and emergencies	10.3

61%

of the total of social expenditure in 2015 was destined to management of impacts in activities



Willian Abreu

23%

of the amount was directed to social investment



Márcia Foletto

Type of social expenditure

(in US\$ million)

	2015
Periodic action in the community	30.3
Periodic institutional action	6.1
Impact management	139.5
Social investment	52.2
General total	228.1

New classification for social expenditure according nature:

Impact management: social action potential issues, mitigation, and the compensation and/or correction of socio-environmental impact, positive or negative, generated by operations and projects. The initiatives are directed in particular to traditional communities and indigenous peoples, and aimed at supporting ethnic development, in addition to civil negotiations and/or court action to make Vale's enterprises feasible.

Social investment: structured initiatives, which involve territorial development and improvement to quality-of-life in the local community.

Periodic institutional action: periodic support for governments – municipal, state, federal and representative entities (Firjam, IBRAM, Military Police etc.) directed at territorial or municipal socio-economic development.

Periodic action in the community: periodic initiatives, and at a reduced cost, to provide social assistance to the community, which results in a closer relationship between Vale and the community. The current classification for infrastructure, diagnostics, donations and sponsorship has been transferred to other analysis levels.

Under the new classification, urban infrastructure and mobility initiatives are considered as part of social action analysis; socio-economic diagnostics are considered under Studies and Monitoring; while donation and sponsorship are not considered to be socio-environmental expenditure, seeing that initiatives for various purposes can be carried out under these headings. Other types also considered, such as direct project execution, the donation of services and materials, *pro bono* activities and even commercial engagement initiatives with mutual benefit for the company and the community.

Regulatory changes

Mining is an activity that operates under governmental concession, and is thus subject to specific regulations. In June 2013 the Brazilian government sent Bill No. 5,807/2013 to the National Congress, proposing changes to Decree-Law No. 227, of February 28, 1967 (the mining legislation currently in force). The Bill, which is still before the Chamber of Deputies, covers mining activities, establishing a National Council for Mining Policy and the National Mining Agency (ANM in Portuguese), including other measures (more information on regulatory issues can be found in the Report 20-F).

Environmental licensing

In the context of environmental licensing, either for the installation of new operations or for the expansion of existing units, Vale has a series of mitigation, control, monitoring and compensation measures. These measures not only meet legal requirements, but which also reaffirm Vale's commitment to developing projects that strive to be increasingly sustainable in its broadest sense as to be proud of their economic, social and environmental legacy.

Vale is developing studies which seek to relate the socio-environmental impacts identified in any new undertaking to their respective mitigation measures suggested to what is already established to operations in the territory so as to create an environmental evaluation and management that is integrated.

To conduct the environmental licensing process and to meet the need for prior knowledge of the applicable legislation and specificity of the territory of interest, according to the location of the operations, the following management tools and technical guidelines are taken into account:

- Guide to Best Practices – Environmental Licensing and the Environment, available for Brazil, Canada, Mozambique and Peru.
- Community Relationship Guidelines.
- Community Relations Guide for Capital Projects.
- Environmental Education Program Guide.
- Operational Licence Methodology.

These documents, combined with the specialists actions, assist the accurate management of the licensing process with the institutions involved, which is fundamental to satisfactory planning of the projects and to production plans and the development of the new business. Vale has an internal auditing system in place for its management system, which evaluates compliance with environmental conditions and the licence updating procedure, as well as having units that carry ISO 14001 certification.

Vale obtained in 2015 over 130 environmental licenses/authorizations which enabled it to continue to expand its activities. Among these, of particular note are the Operational Licenses (LO in Portuguese) for Serra Leste, 6 Mtpa³ – PA and the Vargem Grande Itabirito project, 10 Mtpa – MG, as well as the renewal of the operating licence of the N5Sul mine in Carajás, which represents an improvement in the process of expanding the company's iron ore production.

Potencial biophysical impacts⁴ G4-2

The main biophysical impacts with potential incidents associated with activities of the company are listed below. The details of the main impacts are described in this report, as well as their management practices, indicators and mitigation measures.

- Alteration in air quality.
- Alteration in levels of sound pressure and vibration.
- Soil loss.
- Alteration to the dynamics and availability of surface and subterranean water systems.
- Alteration to water quality (surface and subterranean).
- Suppression of natural subterranean caves.
- Modification of land relief.
- Modification of landscape.
- Loss of habitat in mining operation areas.
- Fragmentation of ecosystems.
- Loss in fauna richness and diversity and population reductions.
- Elimination of vegetation specimens and reduction in their respective populations.
- Reduction in vegetation biomass.
- Intensification of soil erosion processes and sedimentation of water bodies.
- Modification of soil properties.
- Reduction in agricultural production potential.
- Fragmentation and border effects.
- Flight of fauna.
- Modification of biotic communities.
- Alterations to vegetation physiological functions.
- Increase in the quantity of fauna run-over by vehicles.
- Increase in pressure for clandestine hunting and collection of fauna.
- Increase in the incidence of animal vector-driven transmissible diseases.

3. Millions of tons per year.

4. All impacts, when applicable, are treated in the course of licensing procedures, being established – when necessary – appropriate mitigation or compensatory measures by the relevant environmental agencies.

Relationship with People

- Internal Audience
- Employee Engagement
- Diversity and Inclusion
- Life Matters Most
- Professional Qualification for Suppliers
- Territorial Development
- Impact Management
- Vale Foundation

Internal audience

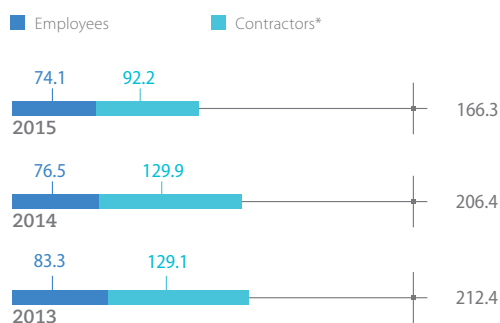
At the end of 2015, Vale had 166,300 employees, counting direct employees (with the contracts of indeterminate length), and contractors (service providers on permanent activities and projects)¹, in addition to 472 of the company's direct employees with a set term contract.

Of the total of the company's outsourced and direct employees, 130,300 (78%) work in Brazil,² mostly employed in the states of Minas Gerais and Pará, which together represent 64% of the domestic workforce ([learn more about local hiring in Development of local workforce](#)).

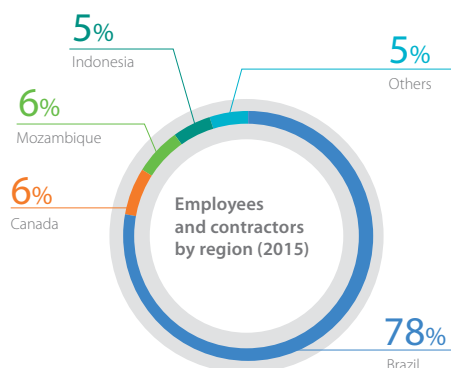
Compared to 2014, there was a 3.2% reduction in the number of direct employees – this being a reflection of austerity policies introduced, faced with the current scenario in the iron ore market and in light of the company's goal of maintaining its focus on world-class assets. [G4-10](#)

Professional workforce

(in '000)



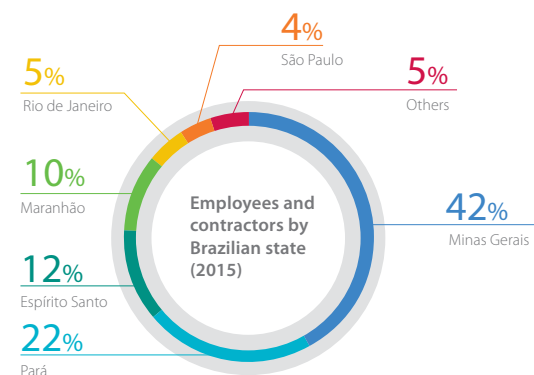
*Contractors include permanent activities and projects.



Employees and contractors shown in the chart above account for 100% of all the employees reported on [G4-10](#)

166.3 thousand

Number of employees at Vale worldwide, outsourced and direct employees – with a set term contract and indeterminate contract



1. In general, these operate on refurbishment, expansion works and new undertakings, as well as maintenance, cleaning and property security contracts, among others.

2. At Vale S.A., in Brazil, where around 62% of the all company's staff is, there are no part-time contracts.

78%

Quota of Vale's
employees in Brazil
in the end of 2015

Lucas Lenci

8.7%

Staff turnover
registered by Vale
in 2015, this being
higher for women: 9.8%

Salviano Machado

Turnover

In 2015, the overall rate of staff turnover was 8.7%, this being 9.8% for women and 8.6% for men, a reflection of the austerity policies adopted in light of the scenario in the iron ore market, and in keeping with the company's goal of continuing to focus on world-class assets. [G4-LA1](#)

	2013	2014 (previous methodology)	2015 (previous methodology)	2014 (new methodology)	2015 (new methodology)
General	6.6%	9.1%	10.7%	8.1%	8.7%
By gender					
Men	6.3%	8.6%	10.0%	7.8%	8.6%
Women	8.5%	12.5%	15.2%	9.6%	9.8%
By age bracket					
Under 30	5.4%	8.6%	11.0%	10.9%	11.0%
Between 30 and 50	2.6%	8.4%	9.7%	6.6%	7.6%
Over 50	39.2%	14.4%	15.9%	10.6%	10.8%
By region					
Brazil	5.9%	8.3%	11.0%	7.3%	8.9%
Canada	6.2%	6.5%	4.8%	6.6%	5.6%
Mozambique	11.5%	13.9%	30.3%	17.6%	18.0%
Indonesia	4.2%	4.2%	2.4%	3.0%	2.9%

Note: from 2014, Vale started to manage and report staff turnover in accordance with the methodology being promulgated in the market: turnover rate calculated taking the sum of those joining and leaving the company per year, divided by two. The result is divided by the total number of employees in the previous year. To make a comparison of information possible, for the last two years the table shows the staff turnover rate using both methodologies.

97%

Percentage of employees in Brazil, in 2015, subject to performance evaluation. The number is in accordance with the last two years

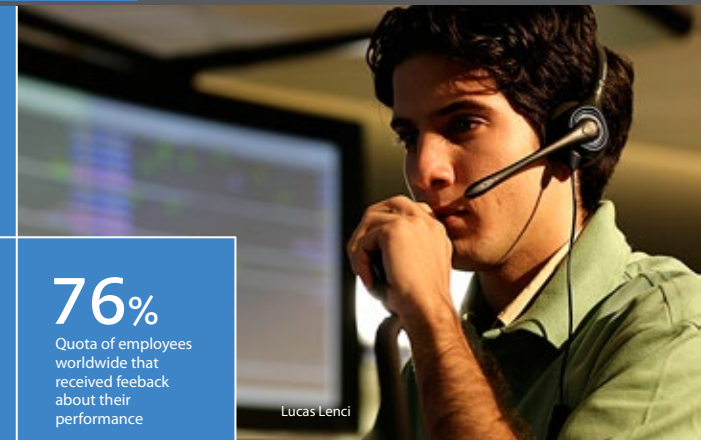


Marcelo Coelho

The career and succession process holds the culture of meritocracy

100%
of the employees have medical care

76%
Quota of employees worldwide that received feedback about their performance



Lucas Lenci

Compensation and benefits

Vale analyses the competitiveness of its employees' total remuneration on an annual basis, through market research in the locations where it operates. In addition to base salary,³ there is also a profit-sharing element based on the previous year as part of its Profit Sharing Program (PLR in Portuguese),⁴ which takes into account team performance and the company's overall results. [G4-EC5](#)

Every year, the Board of Directors discusses and approves targets for the Chief Executive Officer and Executive Directors. Subsequently, these are rolled out to the various teams. The percentage of employees subject to performance evaluation in 2015 was 97%;⁵ the same percentage as the 2013 and 2014.

Another of Vale's directive is to ensure that benefits⁶ are offered in a consistent manner in the various locations where it is present, observing the goals of each business, philosophy and corporate human resources strategy, local market conditions, while respecting the legal requirements.

The compensation and benefits package offered to employees is in keeping with the strategy of attraction, retention and engagement. All (100%) professional staff have the right to medical care and life-insurance, and the majority of them also receive personal accident insurance, private pension plans, transportation allowances, educational training, meal at work, food assistance and the employee assistance program.⁷ On the question of pension plans, Vale recommends that in locations where the financial market permits the management of long-term resources in a sustainable manner, that these are offered using the defined contribution model (more information on pension plans can be referred to in the Report 20-F). [G4-S2](#) | [G4-LA2](#)

Vale complies with local laws related to parental leave. In Brazil, maternity leave has a period of 120 days (for biological or adoptive mothers) and paternity leave of five days. In both cases, the company guarantees employment or salary for a period of 120 and 60 days, respectively, after the end of the absence period.

Also in Brazil the company reimburses part of the costs related to daycare and pre-school fees and tuition for children or minor in custody that is between 3 and 72 months. The benefit is also valid for the single, widowed or divorced employee who has custody of the child by court decision. This benefit can be anticipated in one month in order to ensure the adaptation period of the child.

In Vale units located in Rio de Janeiro and Belo Horizonte the Stork Program was created by the Occupational Medicine in 2014. The initiative offers guidelines and lectures on health and internal processes, such as vacation, benefits, reimbursement, return-to-work exam, etc. The program also offers a breastfeeding room so mothers can withdraw milk and return to work after the maternity leave.

In 2015, the retention rate of employees who returned to work after maternity leave in Brazil was 90.9% and 99.9% for paternity leave. [G4-LA3](#)

3. Vale respects legal and mandatory rulings which govern salaries and their adjustments in each locality where the company operates.

4. Eligibility for participation in this program respects labour legislation, collective labour agreements and/or local applicable rules, in the locations where Vale operates.

5. Direct employees covered by this indicator (G4-LA11) correspond to 100% of all the employees eligible to participate in the profit-sharing program.

6. In the operations located in Canada, China, Japan and Taiwan, for casual and temporary work contracts, benefits vary according to location.

7. The Employee Assistance Program offers free and confidential, social and psychological support services and financial and legal advice to all employees and their dependents.

Career and succession

The company's internal culture of meritocracy is also expressed in the career and succession process, which has the objective of evaluating skill levels and identifying employees' potential to provide them with guidance on their development, supporting management decisions about staff and identifying successors for leadership positions. Based on the results, the employee and manager together draw up an Individual Development Plan (PDI in Portuguese), with points for improvement, the career aspirations of the member of staff, aspects of performance in their current or future job and potential opportunities. In 2014, this process involved 76% of employers, including all technical-operational staff in Brazil, with a plan to implement this process in Mozambique, Oman and Malaysia in 2015. Because of that, 56,267 (around 76%) of the global workforce received at least one feedback session on their performance. [G4-LA11](#)

Freedom of association and negotiation

Vale respects freedom of association and negotiation among its employees and does not interfere with the establishment, functioning and administration of labour organizations or collective wage agreements. Its Code of Ethics and Conduct also expressly states that discrimination against union membership is not tolerated. Furthermore, the company stringently complies with the legislation in the countries where it operates and the eight core conventions of the International Labour Organisation (ILO): [G4-HR4](#)

- **No. 29** – Forced Labour (1930)
- **No. 87** – Freedom of Association and Protection of Union Rights Organise (1948)
- **No. 98** – Right to Organise and Collective Bargaining (1949)
- **No. 100** – Equal Remuneration (1951)
- **No. 105** – Abolition of Forced Labour (1957)
- **No. 111** – Discrimination, Employment and Occupation (1958)
- **No. 138** – Minimum Age (1973)
- **No. 182** – Worst Forms of Child Labour (1999)

In 2015, 96%⁸ of employees were covered by collective work agreements renewed during the year, valid up to the end of November 2016. Regular meetings were maintained with the unions – so as to ensure a transparent and direct relationship, which has contributed, since 1989, to the absence of strikes in the company's main Brazilian operations and no notification of any strikes or stoppages in other locations in 2015.⁹

[G4-11](#) | [G4-LA4](#) | [MM4](#)

One of the themes dealt with in dialogue with trade union representatives and in collective work agreements is the dissemination of health and safety culture as part of the challenge to achieve a zero harm. Vale takes into account the concerns and points of view of employee representatives in the definition of mechanisms and requirements for the prevention of accidents and occupational diseases, as well as respecting local regulations and legislation. Among the measures taken in

this regard training is carried out in the use of machinery and equipment, Personal Protection Equipment (IPE) is provided, regular inspections in operational areas and the maintenance of joint health and safety committees. Employees also have the right to refuse to work in unsafe conditions, which is guaranteed and reinforced in its internal regulation standards.¹⁰ [G4-LA8](#)

Development and training

Vale's education strategy is geared towards the main processes and functions performed, as the basis for drawing-up its training portfolio. In this way skills are developed – technical, management and leadership skills on a transverse basis (health and safety, environmental and respect for diversity) – so as to ensure operational excellence.

By the end of 2015, the company amounted more than 3 million training hours, a decrease of 16% compared to the previous year due to the redirecting of focus on the training of leaders and specialists.

Investment in education in Brazil came to a total of US\$7.8 million, reducing approximately US\$17 million on 2014, due to the strengthening of the internal instructor program – by which employees are trained to act as instructors for the transfer of knowledge.

⁸ The employees of this indicator (G4-11) correspond to 98 % (2013), 95% (2014) and 100% (2015) of all employees reported (G4-10). The 4% not covered by collective bargaining agreements work in Australia, Paraguay, Argentina, Canada, Taiwan, the UK and Japan.

⁹ Prior notification of significant change is not part of the company's standard practices and is not included in collective wage agreements. According to the Global Reporting Initiative (GRI), significant changes are those which cause changes to production levels, such as restructuring, the closure of activities, acquisitions and mergers. Direct employees covered by this indicator (G4-11) corresponded to 98% (2013), 95% (2014) and 100% (2015) of the total employees reported on (G4-10).

¹⁰ Health, Safety and Environmental Risk Analysis and Management Instructions.

93%

of operational trainees
were hired in Brazil in
2015 dedicated their
time to S11D project



Victor Schwaner

18%

was the reduction of
employees without
elementary education
compared to last year



Eny Miranda

Of particular note in the period where the initiatives of the Professional Training Programme (PFP in Portuguese), the purpose of which is to train young people to operate and maintain equipment in the mines, ports, railways and pellet plants. Between 2008 and 2015, more than 15,000 young people participated in this program in Brazil, Mozambique and Malaysia. In 2015, approximately 800 operational trainees were hired in Brazil, 93% being to meet the requirements of the S11D Project in Pará, Brazil. This represents a 30% increase in the number of new people joining the company compared to 2014. Another 200 young people were also hired in the communities where Vale has its operations, in the states of Pará, Maranhão, Rio de Janeiro and Minas Gerais, Brazil, having been trained in the previous year's Professional Training Program. Along the same lines, various other initiatives continue during the year, among them being:

Educational Training Program (PFE in Portuguese) |

It aims to eliminate basic educational deficiencies among the company's own employees at the technical-operational level in Brazil, three class groups of Educational Training Program were begun in 2015, in partnership with Social Service for Industry (Sesi). Also during the year the number of Vale's staff without elementary education was reduced by 18% following the completion of the previous and ongoing class groups. Currently the company has 1,154 employees who lack complete elementary education, which corresponds to 1.6% of the total number of employees.

Internal Certification | Approximately 21,000 employees are covered by the internal certification process, it means 58% of the workforce at a technical-operational level within the company in Brazil. This initiative aims to allocate investment to training and enable employees to develop the necessary skills to fully and safely perform their jobs.

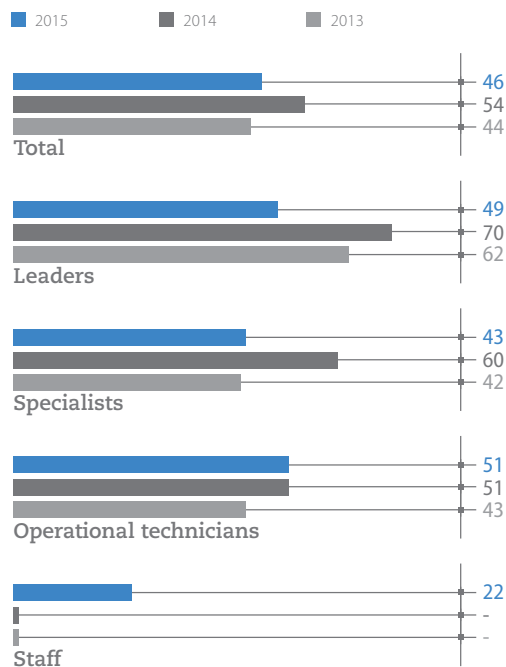
Agents for Education | In 2015, Vale focused more intently on this program and concluded the period with 1,850 agents operating, responsible for the conducting of 1,362 development initiatives as part of the internal training portfolio. This initiative is increasingly important for Vale as it ensures the quality of the courses and adherence to them, in addition to reducing the cost of contracting outside training.

Continued Higher Education | Priority was given to the training of specialists, with masters and specialisation classes being offered in Logistics and Mining to 78 people in Brazil. Another 46 employees, from Brazil and Mozambique, also began the program, the conclusion of which is scheduled for 2016. Also in order to share technical knowledge related to the exploration, mining and logistics businesses, Vale held its second specialists meeting II Encontro de Especialistas Vale, which brought together over 470 employees in discussion forums on the best practices and trends. In addition to this, the company intensified its training of professional staff in corporate functions, in the areas of Finance, Procurement, Information Technology and Human Resources, through its Business Academy. 2,482 people participated in classroom and online training, which represented a total of 26,668 training hours globally. Also the Sustainability Academy was introduced, offering over 900 places in courses on this theme, which will be conducted during 2016.

Health and Safety | This theme is widely disseminated to create a culture of Active Genuine Care and placing emphasis on the corporate value "Life matters most". During the year, over 3,000 leaders participated in the training sessions in content relating to decision-making in the area of prevention of accidents. The training material was restructured and more than 400 internal instructors were involved in the training sessions, which involved more than 85,000 instances of participation.

Training hours [G4-LA9](#)

(annual average by functional category)



• Staff functional category was included from 2015. Division by gender will be shown in the 2016 Sustainability Report.

• Employees covered by this indicator (G4-LA9) correspond to 93% (2013), 91% (2014) and 92% (2015) of the total employees reported on (G4-10).

Employee engagement

Vale reaffirms its commitment to value and support the development of their employees. Through a series of practices, processes, and particularly its Human Resources Policy the company reinforces its principles of promotion according to meritocracy, collaboration, continual improvement and valuing its employees. The company believes in training, potential and people's desire for self-realisation. Engaging, developing and awarding recognition to the workforce ensures continuous growth, sustainable results and the attainment of the corporate vision for the future.

The concept of engagement, adopted by Vale in 2011, is measured by global employee research polls, a regular and transparent communication channel. With this concept, it is possible to evaluate the link between the employee, the company and the personal desire to perform, the support offered to the employee to carry out their tasks in a productive and efficient way, as well as physical well-being, interpersonal and emotional relationships in the workplace. Recent studies conducted by the international consultancy firm Towers Watson, showed that by taking this approach, employees are capable of sustaining high levels of engagement, which has a positive impact on the company's results.

In 2014, studies and analysis were carried out of the statistical correlation between engagement indicators (2013 Global Employee Survey) and other strategic indicators, such as career and succession, employee retention, health and safety, proving the relationship between these themes and creating a new outlook for the management of people and results within Vale. Areas with better engagement indices tend also to show better performance in terms of Health and Safety indicators (accident rates, absenteeism etc.), more high-performance employees and a higher employee retention rate.



Marcelo Coelho

In Oman, training aims to reduce environmental impact

In alignment with Vale's global values "Value our people", "Prize our planet" and "Make it happen", the company's Engineering Department in Oman recently introduced initiatives for the training of employees to improve their working knowledge of the Hosch D2 Scraping Machine, used for the first time in Vale's operations, but it will be expanded globally. This piece of equipment is part of a combination of solutions developed to improve cleaning systems on conveyor belts.

The training – both theoretical and practical –, given to 36 professional staff from the maintenance and inspection area, as well as service providers, enabled them to learn about the characteristics of this innovative machine to then go on to work as a team in a safer and more optimal manner, while also minimizing the environmental impact of their activities.

The year 2015 was dedicated to reinforcing the positive correlation between Active Genuine Care and engagement. The challenge was to map out and influence the adoption of good management practices capable of driving up levels of engagement (and some indicators about health and safety, performance etc.), offering tools, methodology and initiatives applicable to day-to-day leadership ([see more on Active Genuine Care](#)).

By promulgating the concept of engagement associated with strategic indicators (health and safety, productivity and staff retention, for example) to business leaders, regional Human Resources and Health & Safety teams, good management practices were identified and disseminated, associated with high levels of engagement and Health & Safety, to more than 100 business leaders, resulting in an indirect impact on more than 20,000 employees in Brazil and in Mozambique. In addition, technical studies aimed at simplification and automation of the Global Employee Survey process were carried out, that will result in the total digitization of the next survey to be applied.

Diversity and inclusion

Guided by its organisational values and the principles of the Code of Ethics and Conduct and the Human Rights Policy, Vale is committed to promoting gender equality and the inclusion of people with disabilities, and encouraging equality of opportunity, prohibiting all forms of discrimination with respect to access, remuneration, promotion and remaining in employment. It also recognises and promotes talent, and ability in women, reducing this historical and cultural discrepancy, without creating a

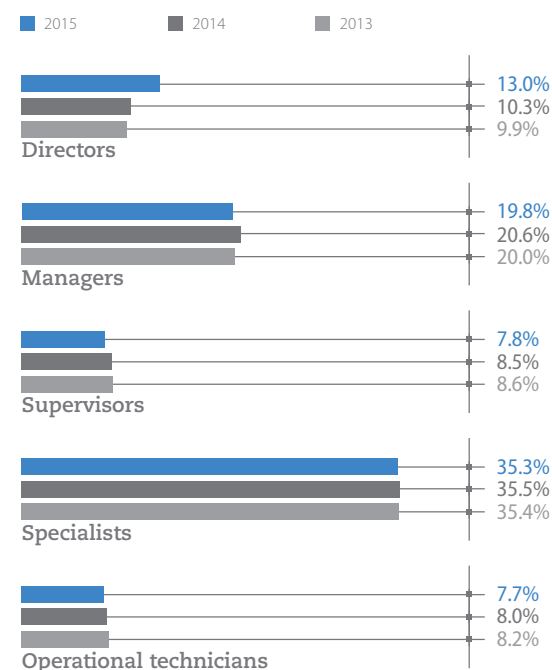
discriminatory environment. So much so that since 2014, the company has been a signatory of the UN Women – Women's Empowerment Principles and the UN Global Compact, which focuses to combat discrimination, among other principles.

This commitment was reinforced in 2015 with the company's adhesion to the global HeForShe campaign, led by UN Women, with the objective of engaging men in socio-cultural transformation for gender equality, promoting equality in relationships and dealings, and rejecting male chauvinist behaviour. This movement mobilized the entire company, and while it was going on weekly notes were published through internal communication channels to put Vale's adhesion to this program into context and invite employees to support women in the drive for gender equality.

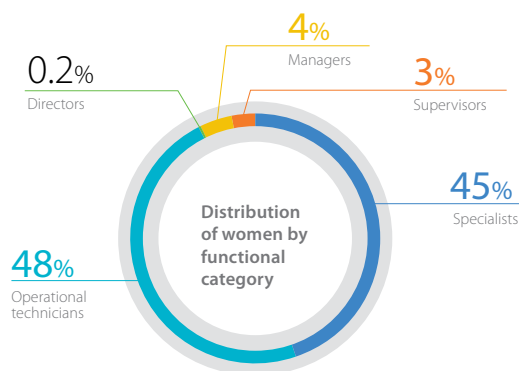
In 2015 women's participation in the company's own workforce amounted to 12.3%. Of these professional staff, 48.2% occupied technical positions (operational and administrative), 44.8% fell into the category of specialists (analysts, engineers, geologists etc.), 3% were supervisors and 3.8% either managers or coordinators. The Executive Board, the Board of Directors and the Fiscal Council together comprise a total of 26 professional staff with the Executive Board including two women. From the perspective of age group analysis, eight are between the ages of 30 and 50, and 18 are over 50. [G4-LA12](#)

There is no differentiation in base salary between women and men who occupy the same role, as determined by the Remuneration Policy. Variations in salary occur due to employees' different levels of seniority and experience within their functional category. [G4-LA13](#)

Proportion of women by functional category

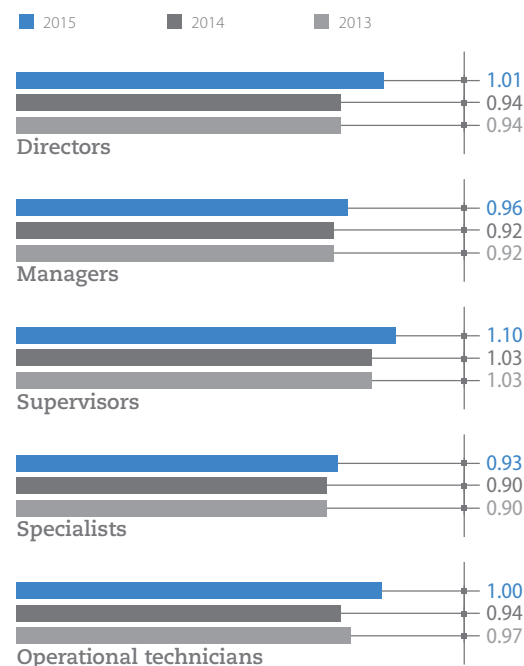


Note: employees in this indicator (G4-LA12) correspond to 100% (2013), 100% (2014) and 100% (2015) of the total os employees reported on (G4-10).



Note: direct employees covered by this indicator (G4-LA12) correspond to 100% of total employees reported on (G4-10).

Proportion of women's salary to men's salary by functional category



Note: direct employees covered by this indicator (G4-LA13) 98% (2013), 98% (2014) and 99% (2015) of the total employees reported on (G4-10).

As part of our Program for Inclusion of People with Disabilities, Accessibility Guidelines are published in compliance with requirements of the Brazilian National Standards Organization (ABNT in Portuguese) Regulation No. 9,050, so that managers can carry out the necessary adaptations to enable their respective areas to receive more people with disabilities. In 2015, in order to meet the annual hiring quota of 140 staff established in the Conduct Adjustment Agreement (TAC in Portuguese) signed with the Public Prosecution Office in 2004 in compliance with Brazilian Law No. 8,213, Vale hired 199 people with disabilities and rehabilitated and re-adapted 21 professional staff. It also expressed its commitment to making leaders and employees more aware and training the diversity and inclusion themes, using online training sessions run as part of the education management system.

Life matters most

"Life matters most" is a corporate value that is present throughout Vale's operations – with the aim of achieving Zero Harm through continuous investment in solutions to prevent injuries and diseases, standardize procedures, manage risks and emphasize Active Genuine Care – a concept which includes care for oneself, care for others, and letting others care for you.

Health, Safety and Environmental Management System

Initiated in 2014, the work of integrating the Health, Safety and Environmental Management System (SSMA in Portuguese) included the release of the Integrated Management System Manual (SGI in Portuguese). This document defines the structure of the SGI and has the purpose of providing support for leaders and mostly the staff in the application of the theme, as well as the continual evolvement of the system.

One of the consequences of the integration of these systems, the volume of corporative standardization documents was reduced by 65%, with resulting productivity gains, synergy and reduced costs. Adherence to the SGI was 66.6%, higher than the target of 59.9% defined the previous year.

Prevention of fatalities

In the context of the quest for Zero Harm, there are fatality prevention programs in place, continually applied and monitored at the units. In 2015 the Guide for Fatigue Prevention Program was launched, which covers fatigue as a result of sleepiness and repetitive tasks, and establishes directives and guidelines for the drawing-up, implementation and monitoring of the program.

Additionally, with the aim of improving learning within the company, a methodology was applied for the prioritization of Health and Safety Good Practices, which applies to procedures with a significant potential for reducing critical risk, and a low implementation cost. During the year, 120 initiatives were certified by those responsible for Vale's Health and Safety, as Good Practices, which, already tested, have made a proven contribution to a safer environment. These initiatives are shared so that the various areas can analyse the feasibility of replicating them in their units, in alignment with the key strategy, "Everything reported to result in organizational learning and continual improvement".

The requirements for carrying out critical activities, in other words, those with the potential to cause fatalities, have been reinforced with the insertion of controls based on lessons learned from fatalities that have occurred in previous years. Currently the Requirements for Critical Activities (RAC in Portuguese) are also known as "Requirements That Save Lives".

Despite all this work and effort, during the year there were five fatal accidents, involving direct employees and contractors, while involved in operations and working on projects:

- Accident during the mounting and calibrating the tyre of an off-road truck (one employee, in Brazil).
- Accident during the manoeuvring of railcars (one contractor member, in Mozambique).
- Accident during landscaping and gardening activities (one contractor member, in Brazil).
- Accident involving vegetation suppression (one contractor member, in Indonesia).
- Accident during the pipe grinding process (one contractor member, in Brazil). [G4-LA6](#)

In all these incidents, Vale's immediate reaction was to provide support for the families and analyse situations for the establishment of corrective action plans, which will be monitored up to their conclusion. To avoid recurrences of this type, the lessons learned as a result of such accidents are also discussed in forums with leaders, and widely publicised both to direct employees and contractors.

Focus on health

In order to build and maintain a healthy and safe working environment, workers and managers must carry out a process of continuous improvement, protecting and promoting the health, safety and well-being of everyone, considering: the physical work environment, psycho-social aspects and the communities that the workers live in.

Actions in these three different areas include health campaigns and programs, with the object of helping employees identify potential risks to health and safety, and encouraging them to alter their lifestyles, with physical exercise, good nourishment, health monitoring and preventative actions on a day-to-day basis (traffic, residential maintenance etc.).



Márcia Foletto

The quest for Zero Harm includes actions to prevent fatality in operational units

Requirements for carrying out critical activities were reinforced

Employees and managers lead continual improvement processes



Olli Geibel

RCA

Reinforced in the year, the Requirements for Critical Activities are already known at the company as Requirements that Save Lives

In 2015, various initiatives were introduced relating to nutrition, physical activity, chronic diseases, tobacco addiction, alcohol and drugs, according to the needs of each locality. In addition to this, continuity was given to the following preventative actions:

Travel Health | The prevention and mitigation of risks through medical evaluation and monitoring during and after the period of travel was intensified. The focus is on providing guidance on prevention measures and the need for vaccination, among others, and classifying the potential risk associated with the journey to be undertaken, which depending on the result, may be recommended against. In addition to this, there is an online platform which provides information on all employees travelling abroad, and the risks to which they are exposed, facilitating decision-making in the event of an emergency.

Malaria control | The Malaria Control Program deals with risks in areas affected by endemic diseases – an initiative that is in alignment with Vale's adherence to the Global Fund to Fight AIDS, Tuberculosis and Malaria supported by the United Nations (UN).

Obligatory occupational health exams were also reviewed in Brazil, which optimized resources and gave continuity to the services provided by the PASA health clinics in Vitória, São Luiz and Itabira, which saw a total of 30,430 consultations by direct employees and their dependents.

Health and Safety as part of business decisions

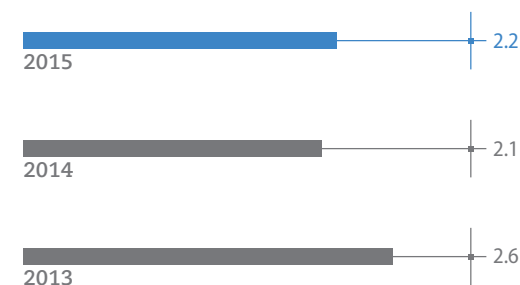
The corporate value "Life matters most" is present in all Vale's guidelines and actions. Decisions by the Executive Board are based on health and safety performance, and promulgated to corporate leaders through meetings, aiming to reduce incidents and improve the quality of life of the company's employees.

Reflex of guidelines and policies related to the theme, the performance in health and safety has been evolving over the years, as shown in the charts.¹¹

- The data in the chart include employees and contractors and does not include first-aid cases.
- MHW = man-hours worked.
- 1 MM = 1 million.
- Includes injuries with or without lost workdays. This rate does not include occupational illnesses.
- For Vale Brasil, the rates for health and safety indicators are calculated based on monthly MHW, which is estimated by the number of employees and contractors (workforce). These figures include data from mining companies, including international companies. For Vale Canada and its subsidiaries, Vale Australia and the Moatize Project, the actual man-hour worked are used.

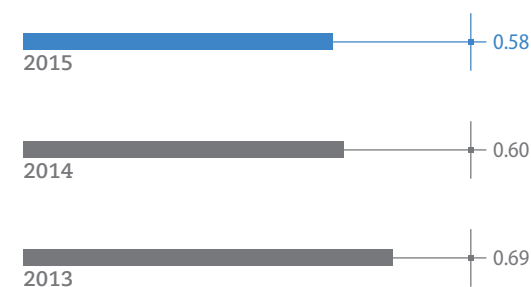
Total injury rate **G4-LA6**

(number of total injuries/MHW x 1 MM)



Lost-time injury rate **G4-LA6**

(number of lost-time injuries/MHW x 1 MM)



¹¹ Vale's health and safety management is carried out by each operational department, and for this reason the data is not provided per region.

106,000

Number of employees and contractors at the Day of Reflection, an event dedicated to take actions to achieve Zero Harm



Olli Geibel



Moreira

In 2015, efforts were focused on fighting Dengue, Zika and Chikungunya

2.1%

Index of medical absenteeism worldwide

2.5%

Index of medical absenteeism in Brazil



Márcia Foletto

In 2015, the accumulated index of medical absenteeism¹² for Vale amounted to 2.1%. In Brazil, the result was 2.5%, and of the causes for time off work, 89% were for non-occupational reasons, 9% due to occupational health problems and 3% due to accidents in workplace. [G4-LA6](#)

There are various health prevention programs in place within the company, but in 2015, due to the global incidence of Dengue, Zika and Chikungunya, efforts were focused on partnerships with government in campaigns to alert the population, and monitor individual cases. The Internal Health Week campaign also had this as its main theme. In addition to this, there is a malaria prevention program in place in Mozambique. [G4-LA7](#)

At Vale, all the employees are represented on committees which discuss themes related to health, safety and environment. The objective is to contribute to the prevention of accidents and occupational diseases and identify areas for continual improvement in the various processes, and working conditions. [G4-LA5](#)

Genuine Active Care Culture

Active Genuine Care is a concept widely promulgated through Vale's engagement initiatives, and which in 2015 were as follows:

Day of Reflection | Health and safety event which brought together 106,000 employees and contractors to reflect about fatalities, concepts of heart and mind¹³, and intensification of collective efforts to achieve Zero Harm.

Internal Global Prevention Week (S&S in Portuguese) | On the themes Fatalities Prevention and Mental Health, direct employees and contractors participated in initiatives to reinforce the importance of focusing on risk situations with the potential to cause fatalities, and taking care of issues related to physical and mental well-being.

Ambassadors for care | An initiative that has the purpose of mobilizing employees and contractors on the importance of care and the power it has to have a positive impact on people, through the

upholding of the corporate value "Life matters most", by workers in recognition of this.

Professional qualification for suppliers

By the end of 2015, Vale had made 9,300 transactions with suppliers in Brazil, Mozambique and Canada, through provision of materials contracts, long-term service provider contracts and spot purchases. The amount spent on payments of acquisitions and through contracts amounted to US\$ 16 billion taking Brazil, Mozambique and Canada. The purchases in Brazil corresponded to 71% of this total.

The positive impact of Vale's operation locally, the hiring of labour, products and services, acts as a driver for local development, encouraging respect for reality and specific needs, also taking into account regional vocations. In 2015, the percentage purchases made locally¹⁴ was 90%, two percentage points higher than that in 2014 with 57% being made in the same state/region, maintaining the same level as in previous years. In Brazil, the

percentage of local purchases amounted to 95% (for the country) and 62% (state), two percentage point higher than in 2014 and one percentage point lower, respectively. In Mozambique, local purchases reached 73%, six percentage points higher than in the previous year. This increase was due to the production ramp-up of the Moatize plant 2, with the transfer of the project from project status to operational status following completion of the construction works. In Canada, local purchasing amounted to 91% (for the country) and 75% (for the provinces), respectively nine and 18 percentage points higher than in 2014. This result was due to the ramp-up of the nickel operation in Newfoundland and Labrador. [G4-12](#) | [G4-EC9](#)

¹² Vale's rate of medical absenteeism = $(\sum[\text{workdays lost}]) / (\sum[\text{exposed employee in the month} \times \text{number of days in the month}]) \times 100\%$

¹³ Vale can achieve Zero Harm if its workforce work together, using the head – what they know, their expertise – with their heart – what they feel, the emotions that lead them to care and take care for others and themselves.

¹⁴ Vale considers as local purchases the ones made with the suppliers that are geographically located in the same country and also in the same state of the federation where the operating unit is, except in the case of Mozambique, which are considered local purchases only the ones made in the country.

In order to strengthen its drive to encourage growth, the company invests in improving its supply chain and the training of professional staff. An example of this is the Inove Program, which encourages development on the part of its suppliers, offering them training opportunities, access to credit, and incentives to improve the competitiveness of their operations. As part of this initiative, the InoveCapital portal was launched, a web-based environment through which suppliers can visualize their trade invoices and can also request participating financial institutions to make advance payments on their tax invoices. They can also obtain financing for help in delivering goods or services contracted for by Vale. In 2015 approximately US\$254 million in funding was obtained in this way in the form of financing and credit.

In 2015, by creating closer partnerships with regional agents the training plan was improved, in accordance with the priorities of supplying goods and services from each locality. A joint initiative with industry federations in the states of Pará, Maranhão and Espírito Santo in Brazil resulted in the training of 72 companies on themes such as supplier registration guidelines, the drawing-up of commercial proposals, labour obligations, business management, and the assessment of financial risk.

Another initiative, the technical cooperation agreement with Brazilian Service Support Small and companies (SEBRAE in Portuguese), during the year involved more than 500 companies in awareness initiatives in the states of Espírito Santo, Maranhão, Minas Gerais, Mato Grosso do Sul and Pará. This initiative will be continued with the offering of training in various management areas, based on individual consultancy firms. More than 200 suppliers, also participated in consultancy and training initiatives, as part of the cycle that will have duration of two years, up to 2016.

Territorial development

Mining, in general, is located in areas that have significant socio-economic deficits, where its activities generate potential impacts that can be both positive and negative. The installation and operation of the various undertakings can interfere with the way of life in neighbouring communities, resulting in disturbance, but also creating jobs and incomes, for example, as shown in the table below.

Potential social and economic impacts [G4-2](#) | [G4-EC8](#) | [G4-SO2](#)

Direct potential impacts	Indirect potential impacts
<ul style="list-style-type: none"> ■ Disturbance of population ■ Interference in the way of life in neighbouring communities, indigenous people and traditional communities ■ Increase in local traffic levels ■ Possible involuntary removal of families for the installation or expansion of the undertakings ■ Generation or intensification of conflict for land-use ■ Opportunities for jobs, income generation and increasing purchasing power among the population ■ Increase in the number of formal jobs ■ Reduction in the number of jobs during the project retirement phase ■ Increase in demand for the hiring of local products and services ■ Training of local suppliers ■ Increase in tax levied and the investment capacity of the public authorities 	<ul style="list-style-type: none"> ■ Incentive for immigration and an increase in the population growth rate, due to employment expectations ■ Increase in real-estate speculation with the increase in housing deficit ■ Increase in price levels and cost of living ■ Increased fragility of public security ■ Pressure on infrastructure and public services ■ Economic development, stimulating expansion in service sectors and commercial activity ■ Attraction of suppliers of products, services and an increase in the number of local companies ■ Increase in the level of professional qualification among the population ■ Increased formality of the economy ■ Stimulus for new local production arrangements ■ Attraction of public and private investment ■ Generation of scientific knowledge ■ Higher political and economic representation in the municipality

To deal with the social and economic complexity of the territories involved, Vale uses an Integrated Management Model which promotes synergy and strengthens its ability to act through the systematic management of impact mitigation actions and social investment initiatives.

Socio-economic studies¹⁵ and participatory diagnostics¹⁶ enable impacts to be identified and the mitigation measures to be taken, as well as the specific needs of each territory and community, thus ensuring the assertiveness of the programs, projects and social initiatives. It also enables a Multi-Year Plan for Social Expenditures to be drawn-up for the short, medium and long terms, facilitating the provision of funds for continuing with the initiatives, which are defined according to challenges faced.

The company has teams in place dedicated to social action in the territories and permanent relations with the communities, guided by a set of policies and standards, with the support of specific tools and specialists. Social action involves processes such as social dialogue, management of the community's demands, planning and management of social expenditure, volunteer work and structured initiatives on themes such as human rights and the involuntary removal of people, with special attention given to indigenous people and traditional communities.

In parallel to this, the Vale Foundation maintains a series of initiatives which aim to contribute to the sustainable development of the local regions, on themes that have synergy with the indirect impacts generated by the company's activities, with priority being given to jobs and incomes, education and health, as well as additional aspects such as culture, sport, urban development, as well as social protection and incentives.

Programs and practices by operational phase G4-SO1	Licence/ Implementation	Operation	Closure
Environmental, Social and Economic Impact Assessment	■	■	■
Social Programs (education, culture, income generation, etc.)	■	■	■
Mine Closure Plant (environmental, social and economic aspects)	■	■	■
Relations with Local and Traditional Communities	■	■	■
Management of Social, Environmental and Economic Impact	■	■	■
Professional Qualification for the Communities and Employees	■	■	■
Professional Qualification for Suppliers	■	■	■
Enhancement/Protection Program of Cultural Heritage	■	■	■
Others	—	■	■

■ Intense occurrence – more than six programs implemented. ■ Moderate occurrence – up to six programs implemented.

¹⁵ Monitoring of socioeconomic indicators are studied by region. In the North system it includes the municipalities most affected by the social and economic impacts of the company, Canaã dos Carajás e Paraupébas. In the Southern/Southeast System, monitoring is performed in the municipalities affected by Mariana Complex operation.

¹⁶ Participatory diagnoses are performed in the communities that receive the most significant impacts of one or more enterprises in all Vale's acting territories in Brazil.



Victor Schwaner

Federal Government and Vale join forces for the training of workforce

A partnership signed in 2015 between Vale and the Ministry for Industrial Development and Foreign Trade (MDIC in Portuguese), to make it possible for learning institutions to graduate and qualify workforce at the operational level, resulted in the offering of 790 places as part of the National Program for Access to Technical Teaching and Employment (Pronatec in Portuguese – Production Sector). This alliance between the company and the federal government has been contributing to the professional skills that meet the most urgent and strategic demands of the productive sectors where the large investments are, using the infrastructure of the existing school system.

The candidates were selected for courses indicated by Vale – for the training of mechanics, electricians and welders –, according to the demand for workforce identified in Minas Gerais and Pará states. They receive grants offered by the

federal government for continuity training at teaching institutions such as The National Service for Industry (SENAI in Portuguese), for example. After the conclusion of the course they will be trained to work at the company or at another company in the mining production chain.

According to the MDIC, the poverty reduction policies and productive inclusion are added to the promotion of competitiveness in the companies to ensure that job vacancies are occupied by increasingly qualified workforce. Qualification is essential both to ensure investment and increase the innovation capacity in companies and for the increase of formal jobs in Brazil.

For Vale, Pronatec is fundamental in the training of professional staff in areas where mining is expanding in a major way, such as the Northern region of the country, and the results achieved based on this Public-Private Social Partnership, which has also counted on the Vale Foundation, are proof of its success. All training demands that Vale has forwarded to MDIC and to the Ministry of Education (MEC) were

attended by the program because its industry was considered strategic to the country, according to the ministries' evaluation, integrating public policies of training and qualification.

Results

Total demands of Vale assisted by Pronatec:

790 places for Initial and Continued Training (FIC in Portuguese) courses

Vale Pará: 650 places offered (Canaã dos Carajás)

Vale Minas Gerais: 140 places directed to people with disabilities (PCD in Portuguese)

Registrations received: 1,369

Offered courses: Electric Industrial, Mining Equipment Mechanic, Industrial Machinery Mechanic, Welder MIG and MAG, Solder in Oxyacetylene, 50 in Welder in Process Wire Tubular Steel, TIG Welder and Equipment Operator.

51

communities close to the Company's operations and projects in Brazil involved with Social Relations and Investment Plans



Acervo Vale

72%

Local hiring rate index registered in 2015, eight percentage points higher than the previous year



Eny Miranda

Community relations management

Through the company's Integrated Management Model, in 2015, 5,132 demands and complaints were received from the communities, of which 786 are being dealt with, and 257 were deemed to be outside the company's control. And all the others were properly solved during the same period. Social dialogue is one of the tools fundamental to relations with neighbouring communities. Through permanent interaction and communication channels, as well as the application of methodologies that involve participation by the community, Vale shares information and aligns interests with expectations, thus creating solutions together with the communities. The direct involvement of residents in the definition, execution and monitoring of the various social initiatives, has enabled the planning and implementation of Social Relations and Investment Plans in the 51 communities¹⁷ closest to the company's operations and projects in Brazil, respecting local needs and priorities. [G4-SO11](#)

Development of local workforce

The increase in the hiring of local workforce, and the purchase of products and services is a consequence of Vale's operations in the various territories. The company is committed to respecting local realities and their needs, as well as identifying and implementing initiatives which take into account regional vocations. To this end, it seeks to develop its supply chain and contribute to the training of professional staff.

In 2015, the local hiring rate was 72%,¹⁸ eight percentage points higher than the previous year. Just considering members of top management,¹⁹ from the local community,²⁰ this index was 48%. [G4-EC6](#)

Relations with indigenous people and traditional communities

Focusing on continuously improving its relations with indigenous people and traditional communities, Vale has a number of professionals on its staff with multi-disciplinary training and experience in indigenous matters, while carries out training of employees and suppliers who have an interface with indigenous people in areas influenced by the company's operations. It also participates in a forum for the definition of good practices for relations between companies and indigenous people, organised by The Nature Conservancy (TNC) and the Brazilian Mining Institute (IBRAM in Portuguese), which also has the support of National Indian Foundation (Funai in Portuguese), funding bodies, companies and indigenous movements. Within this framework, it is sought to establish a constructive relationship, of mutual benefit, based on respect for cultural diversity and specific rights, with a focus on the ethnic development²¹ of indigenous people and traditional communities within the company's area of influence.

In Brazil,²² Vale's operations have relations with 49 traditional communities and 12 indigenous population centres, through which the company maintains agreements, impact mitigation programs or relationship initiatives. Among the 16 communities of indigenous people in Australia, Canada, Indonesia, Malaysia and New Caledonia, there are agreements signed with 12 communities. [MMS](#)

¹⁷. Set to criticality criteria according to the amount and types of impacts (noise, vibration, shaking, particulate emissions, etc.) of one or more projects.

¹⁸. Direct employees covered by this indicator (G4-EC6) correspond to 100% (2015) of the total employees reported on (G4-10).

¹⁹. Managers and directors are considered as top management.

²⁰. Despite the fact that the calculation of this indicator took into consideration the location and state of birth of the employees, the hiring practice, when applicable, prioritizes residents in the state, who were not necessarily born there.

²¹. The notion of ethnic development refers to the social capacity of indigenous people and traditional communities to build their future, in harmony with their respective historical experiences and the real and potential resources of their culture, in accordance with projects defined according to their own personal values and aspirations. It presupposes the existence of the necessary conditions for achieving self-capability in a society that is culturally different, so as to be able to define, deal with and guide their own development.

In 2015, the implementation of a mitigation impact program was begun in Maranhão. The program refers to the expansion of the Carajás Railroad in Maranhão and aims to train employees and contractors, and inform indigenous communities about the project progress. Vale is awaiting the approval of various licensing bodies for the implementation of five other programs, all of which have the effective participation of indigenous people.

To manage aspects of the relationship with indigenous people and traditional communities, during the year a platform was also developed a platform to assist in monitoring and planning. Among other functions, the platform allows the monitoring of critical questions, visits and demands; the management of routine issues, bans, historical archiving and documentation; and the monitoring of studies and operational plans.

Despite all these measures, in 2015, it was given an injunction in court which began in 2012 regarding the Onça Puma nickel ploy, in Ourilândia do Norte, in the state of Pará (Brazil), where the Regional Federal Tribunal of the 1st Region (TRF1), motivated by local indigenous people's demonstrations, the Xikrin and the Kayapo, ordered the suspension of the mining activities at the location. The same court decision resulted in the company having to make a deposit of R\$16.3 million (US\$5.2 million) into an escrow account. Part of this amount is blocked until final judgement on the conflict, partially gathered by the indigenous. Vale appealed the claim, and in mid December, the Supreme Court made the decision permitting the continuation of mining activities and establishing a time

limit of 120 days, for the implementation of compensatory plans and measures for the indigenous people. The Basic Environmental Plans for the Xikrin and Kayapó people are already being implemented and Vale has been taking all the necessary actions in order to fulfil that commitment, although is facing difficulties in the total implementation of the plan for the Xikrin due to the fact that the indigenous people are not permitting access by the company to their lands.

Monitoring lawsuits

Vale maintains wide-ranging, permanent and structured dialogue with the indigenous people and traditional communities close to its operations and projects.

In 2015, Vale was subject of three new court cases, two of them about the renewal of two voluntary agreements, on which the company and the indigenous people still disagree about financial questions and the third one contesting licensing for expansion to the Carajás Railway with the indigenous people Tenetehara Guajajara and Awá-Guajá. These legal issues were managed in a transparent manner, and based on permanent dialogue with the communities.

On May 2016, the Associação Indígena Bayaprã de Defesa do Povo Kikrin do O-Odja and Associação Indígena Porekro de Defesa do Povo Xikrin do Catetê ("Authors"), filed a Public Civil Action (ACP in Portuguese) related to the indigenous component study of the S11D Project environmental license before the 2nd Federal Court at Marabá (PA), against Vale S.A., Fundação Nacional do Índio (FUNAI), Instituto Brasileiro do Meio Ambiente e

dos Recursos Naturais Renováveis (IBAMA) and Banco Nacional do Desenvolvimento Econômico e Social (BNDES).

The authors of the claim requested the suspension of the environmental license of the S11D project until consultation with the supposed affected indigenous communities, and the monthly payment for village until studies are finalized, material damage in the connection to the supposedly studies not realized and moral damages.

Vale understands that the requests are unfounded, mainly due to the fact that these communities are located more than 12 kilometers away from the project, a longer distance than the 10 kilometers required by the legislation for mandatory consultation of indigenous communities during the environmental licensing process of projects.

The company has another 10 active lawsuits, which were reported on in the 2014 Sustainability Report with three of these being updated²³ in 2015, with a total of 13 suits ongoing awaiting judgement. [G4-HR8](#)

22. In the states of Pará, Maranhão, Minas Gerais, Espírito Santo and Sergipe.

23. Lawsuits updated in 2015:

- * Suit filed by Funai and the Federal Prosecution Ministry/MBA requesting an injunction obliging Vale to maintain the financial support given to the indigenous Xikrin people of Catete and Djudjêkô people close to the Carajás iron ore mine.

- * Public Action (ACP) filed by the Federal Prosecution Ministry for supposed infringement of the conditions of the environmental licence (LO mineral pipeline) - Quilombolas case.

- * ACP filed by the Federal Prosecution Ministry/Marabá in the subsection of the federal courts located in the municipality of Redenção/PA. The ACP requests, in the form of an injunction, (i) the suspension of activities at the Onça Puma site until impact studies are carried out and mitigation/compensation measures are implemented for the Xikrin and Kayapó people, or payment by way of a subsidy, of a monthly amount of 1 million reais for compensation in the absence of measures being adopted, until they are effectively implemented; (ii) determination by FUNAI to carry out an analysis of the documents of interest to the indigenous communities, within a reasonable time period; (iii) that SEMA abstains from granting an operation licence or extending the current one until there is a effective proof that the conditions have been fulfilled.

49 traditional communities
and 12 indigenous population
centres are involved in deals,
mitigation programs or
relationship actions, in Brazil

1,800

of railway network are preserved by Vale in Brazil, with Carajás Railway and the Vitória to Minas railway



Paulo Moreira

Vale is committed to decreasing the number of accidents in the railways

6.3%

of the railway network in Brazil is managed by Vale

%

of accidents in both railways of the company has been decreasing every year



Gabriel Lordello

Impact management

Railways interdictions and incidents

In Brazil Vale operates approximately 1,800 km of railway network, which is the equivalent of 6.3% of the country's total railway system. It operates the Carajás Railway (EFC), 892 kilometres in length, and the Vitória to Minas railway (EFVM), with 905 kilometres. These railway lines cross through various municipalities with significant socio-economic deficits, many of which have no other public transport system available or safe access roads. In these locations, the company also operates long-distance passenger trains.

In 2015, as in the previous fiscal year, the EFC and EFVM railways suffered from picketing action as a result of protests about compensation for the impacts caused by the rupture of the Samarco dam, the renewal and formalization of agreements and security in the communities, among others aspects. These involved traditional communities and indigenous people, as well as urban and rural communities located in areas coming under Vale's influence, in addition to social and political movements. The reason for

the demonstrations was associated with impacts mitigation, safety in communities and renewal and formalization of agreements, among others, including vindications of communities directed to external demands of Vale. These demonstrations had an impact on the transport of production flows and travel facilities in other communities, as a consequence of interruption and delay to passenger transport, fuel and other cargo.

In these cases, the company took the legal measures necessary for the reopening of the track – which is public property and which provides a service which is essential to the country. However, it sought to understand the reasons behind the protests and deal with the protesters' demands.

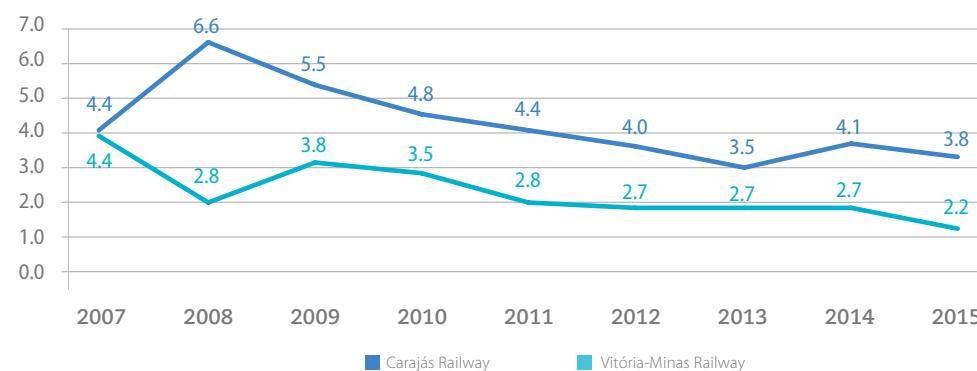
The company is still committed to reducing the number of incidents on its railways. To this end, the Company has begun a number of impact mitigation initiatives and works with teams that are dedicated to the management, monitoring, assistance and actions of barricade incidents.

Among these initiatives are the identification of the critical sections that carry environmental risk; monitoring of meteorological conditions; the use of simulators and the holding of training sessions for train drivers; the development of projects of autonomous driving trains; the checking of the rolling stock that travels on the railways; the

introduction of improvements to level crossings; the fencing off of the railway at critical locations; and the installation of cameras in locomotives. Systems have also been adopted such as failure prevention system, the standardization of operations, and education and awareness campaigns in nearby communities.

Incidents – per million train/kilometre

(MTKm)



Conflicts over land use

Most of Vale's undertakings are located in remote areas, where there are indigenous people and local communities living adjacent to the operations. The land and its resources are of fundamental importance to these communities because, in addition to being where they live, it also forms the basis of their subsistence.

According to the legislation, maintaining the integrity and security of railway rights-of-way are the company's responsibility. For the most part, conflicts about these rights-of-way for the Vitória-Minas and Carajás Railways (EFVM and EFC, respectively) are due to irregular occupation and demarcation, with the installation of fences for family agriculture and the construction of homes or small commercial buildings, on an irregular basis.

In 2015, Vale dealt with 70 cases of conflict over land use, which involved manifestations and a number of stoppages to operational units. The cases were regionally distributed, as shown in the table below, followed by the respective points of disagreement.

Of its principal conflicts, five are due to demands from indigenous people. In Maranhão (Brazil) the conflict took place with the Awá-Guajá and Guajajara, motivated by doubts about the licensing process for the expansion of the Carajás Railway. In Minas Gerais, Brazil, there was a conflict due to an accident on the part of Samarco involving the Krenak people, and in Pará, Brazil, there were two incidents related to the renewal of an agreement between Vale and the Gavião people.

In addition to the case involving the Krenak people, there were two further conflicts motivated by the accident at the Fundão Dam. Vale has been providing support for Samarco right from the first moment of the disaster, in helping to bring aid to the communities affected ([for more on this subject, please see the chapter on the Mariana Accident](#)).

The community relations teams and specialist deal directly with local leaders. Relations with some communities require special attention due to the history of conflict and social vulnerability. In this way, the company prioritises the management of conflicts through dialogue. Sometimes it is necessary to take a particular case to the courts – a situation in which Vale's seeks conciliation and acts with respect for the rights of those involved, negotiating agreements which facilitate assistance and the preservation of cultural and social identities, as well as development of the territory. All these cases are duly monitored aim to resolving the situation. [MM6](#) | [MM7](#)

State	Points of disagreement	Number of conflicts
MA		17
	Demands by indigenous people	1
	Infrastructure and urban mobility	14
	Health and environment	2
MG		19
	Demands by indigenous people	1
	Infrastructure and urban mobility	1
	Stoppages, interdiction, invasion, common land issues or removal	14
	Health and environment	3
PA		33
	Demands by indigenous people	3
	Infrastructure and urban mobility	10
	Stoppages, interdiction, invasion, common land issues or removal	12
	Health and environment	8
SP		1
	Stoppages, interdiction, invasion, common land issues or removal	1
Total conflicts over land use		70

Involuntary Relocation

As part of company's projects for installation or expansion of its operations, Vale gives priority to alternatives to avoid the compulsory relocation, or involuntary relocation of communities or families from the place where they live. However, due to the precise location of the iron ore deposits, adoption of this procedure may be unavoidable.

The Involuntary Relocation Guidelines Norm, the Community Relations Guide and the Community Relations Manual for Capital Projects, are all documents which provide guidance for this process implementation in accordance with international guidelines, specifically those issued by the World Bank and the International Finance Corporation (IFC).

Based on the socio-economic studies, transparent dialogue and the proposing of alternatives to meet the social requirements of the families, Vale provides support in their adaptation to their new homes, as well as seeking to maintain or improve their living conditions.

Involuntary relocation involves the interference of families livelihood, whose main risk – reducing production capacity and income generation – is evaluated and mitigation actions are incorporated in the Assistance Plans to families. During the transition from the place of residence a compensation for loss of earnings is applied and after the transfer of families and/or livelihood social technical assistance²⁴ is offered to support

the recovery of living standards previously checked the relocation process.

In Brazil, actions for involuntary removal or compulsory relocation in 2015 referred to the S11D Logistics project, the modernisation of the stretch of railway between Belo Horizonte and Sabará, the Sponsorship Project, and the expansion of the Catalão Mineral-Chemical Complex. In Mozambique, such actions referred to the Project Moatize Expansion.

Of the 100 families involuntarily relocated during the year, 10 opted for Basic Compensation, 21 for Assisted Compensation, and only 69 for Resettlement. In Mozambique, 18 families were subjected to Resettlement. [MM9](#)

²⁴. In case of resettlement and assisted compensation, according to the family free choice

Project name	Location	Country	State/District	Provided simple cash compensation (without follow-up)	Removed through assisted compensation	Removed through resettlement
Sabará Modernization Project – BH	Nações Unidas, Sabará	Brazil	Minas Gerais	1	0	0
Mining-Chemical Complex of Catalão – Raising Dam	Macaúba and Mata Preta	Brazil	Goiás	3	0	0
Project Patrocínio	Mata da Bananeira	Brazil	Minas Gerais	1	3	3
Ferro Carajás S11D Project	Vila Mozartinópolis	Brazil	Pará	0	0	48
North Logistic Corridor	Alzira Mutran	Brazil	Pará	5	18	0
Project Moatize Expansion	Nhambualo	Mozambique	Tete	0	0	18
General total				10	21	69

Atmospheric emissions, noise and vibrations

At the Environmental Control Centre (CCA, in Portuguese), in Nova Lima, Minas Gerais, Brazil, Vale maintains a technical team qualified to manage and monitor the environmental performance of the operational units in the Southern System, which includes the production of iron ore and pellets, as well as the surrounding areas. Holding ABNT ISO/IEC 17025:2005 certification, which attests to the competence of the monitoring of air quality, seismographic movement and background noise, the CCA started 2015 with a new system, with the installation of 28 automatic stations by the end of the period. These carry out sampling in real-time and make it possible to implement prevention and control measures in the operations, reducing possible environmental impacts. The initiative is pioneer in South America and by 2020, the intention is to expand this network to 82 stations.

Especially for the Vitória-Minas Railway, the company drew up a structured plan for reducing operating noise, with a view to improving the acoustic comfort nearby communities. In 2015, among others, it was sealed acoustic coating in the urban area by installing acoustic barriers between the railway and the community, as well as, in cargo testing area. This actions will be extended to other locations in the following years.

Also as part of mitigating the impacts of railway noise, a survey was carried out among the communities affected by the Carajás Railway (EFC), which includes the drawing-up of a prioritisation matrix of environmental and operational measures, considering the distance and elevation between residences and the railway, the quantity of residences affected and the potential sources of noise generation, among other variables.

Along the same lines, Vale actively participated in the Working Group responsible for the ABNT NBR 16425 Acoustic project – which measures and evaluates the levels of sound pressure generated by transport systems – for the Railway System, which seeks to establish a measuring system and parameters for sound pressure caused by railway systems and is expected to be launched by the end of 2016.

Infrastructure and support to social services

Of the total social expenditure invested in 2015, US\$103 million was used in social programs/projects implemented directly by the company, of which US\$75 million was invested for improving infrastructure and support to services, as shown in the next table.

Funds invested in infrastructure <u>G4-EC7</u>	(US\$ million)
Donation/transfer	11,3
Commercial engagement (shared infrastructure)	0,4
Direct implementation – social program/project	47,2
Services/materials	29,9
Total	88,8

Funds invested in services <u>G4-EC7</u>	(US\$ million)
Donation/transfer	7,0
Direct implementation – social program/project	27,8
Sponsorship	0,01
<i>Pro Bono</i>	0,05
Services/materials	0,1
General total	35,0

US\$75 million of Vale's social expenditures refer to direct execution in infrastructure and services support

Demobilization of assets and mine closure

Conscious of the impacts from mine closures, and therefore the need to set guidelines for this when planning a mine project – even if it has a long life cycle – Vale has a Mine Closure Plan in place for all its operations. This includes initiatives that are adjusted as the business evolves, with possible changes, either to the environment and nearby communities, or to the project itself.

Additionally, the company also makes an Asset Demobilization, which meets international accounting requirements, part of which is in compliance with the Sarbanes-Oxley Act. This provision is updated annually and the amounts are published in the financial statements (totalling R\$2.7 million in nominal value terms). In 2015, although no mines were either closed or undergoing closure, Vale pressed ahead with the progressive retirement of assets which have reached operational capacity. The cost of this measure is borne by provisioned funds, with usage of the amounts released being monitored by Environmental Executive Management and subject to external audit. [MM10](#)

*To learn more, see 20-F report at the session about demobilization of assets.

Rural Environmental Registration (CAR)

In accordance with Standard Instruction MMA 2/14, which deals with Rural Environmental Registration (CAR in Portuguese) implemented nationally, the legal time limit for rural properties to adhere to this instruction is one year, with this being extended for an equal period as a result of the publication of Decree MMA No. 100/2015 – a time limit therefore being established for registration by the end of May 2016.

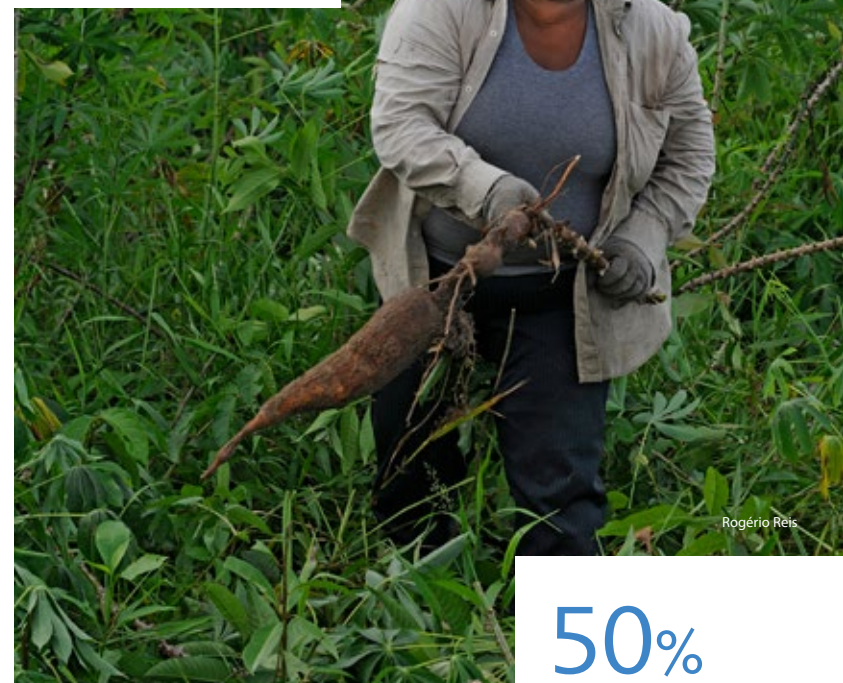
As a result of the work of its operational and corporate units, Vale has carried out more than 50% of registration identified as needed, which involves the assessment of data for approximately 300,000 hectares eligible for registration, of approximately 1,000 properties, distributed across nine states, with most of these being located in the states of Minas Gerais and Pará (Brazil). All this work involved compliance with the percentages of the Legal Reserve, based on the forestry code, and additional standards published, including guidelines for the decomposition of Permanent Preservation Areas.

To this end, different ways of regularization established by the forestry legislation were looked at, such as compensation alternatives that enable operations, expansion and projects to be compatible with requirements for conservation and territorial management. In this regard, the company uses an internal regularization mechanism, considering compensation for properties which require land, and others which can be included as part of the Legal Reserve. These measures contributed to providing reserves with conditions that ensure their ecological functioning, and avoiding their fragmentation.

Vale is therefore taking all the actions necessary to meet the registration deadline.

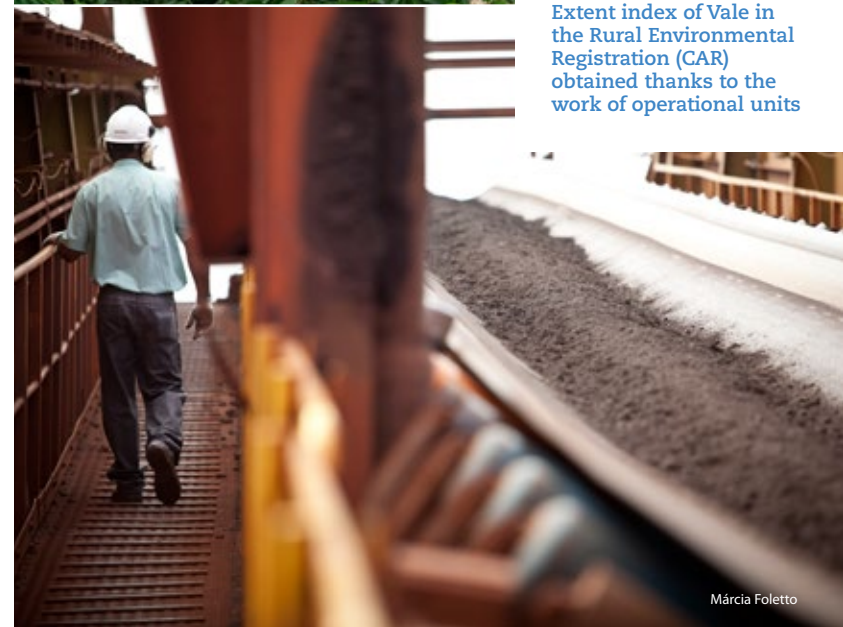
US\$2.5

billions was the amount
of Provision for Asset
Demobilization available
in 2015



50%

Extent index of Vale in
the Rural Environmental
Registration (CAR)
obtained thanks to the
work of operational units



Vale Foundation

In combination with Vale in its mission to transform natural resources into prosperity and sustainable development, the Vale Foundation seeks to make progress in the economic and social spheres in areas where the company has operations. Its work is carried out locally, supported by a network of partnership institutions, with recognised experience and specializing in these particular themes. The projects seek to provide support for improving the standard of public management, training in social participation, reinforcing networks for promoting social work and providing social protection, as well as promoting entrepreneurship in the communities, while respecting local identities.

To this end, the organization carries out structure-related social initiatives and programs, the premise of which is to fortify public policies, the functioning of partnerships and the promotion of social mobilization. These involve initiatives on the following operational fronts:

Education, with the intention of contributing to improving the quality of public education through, mobilization, training and interaction with the various agents, adding to local education potential.

Job and income generation, for the promotion of entrepreneurship, business development and specific training.

Health, to promote health through the development of community projects which aim to encourage self-care and improve the service offered by the Primary Healthcare Centres.

Culture, broadening the population's access to culture, strengthening regional identities and valuing culture, historical records and Brazil's historical heritage.

Sport, as a factor for social inclusion, encouraging human development, training as citizens and the dissemination of a sporting culture in the community.

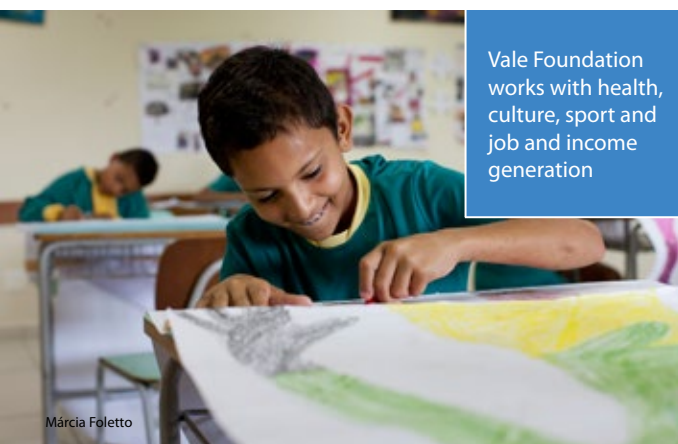
Urban development, helping to develop and enhance municipal capabilities, improving planning procedures and land management, with active participation on the part of society.

The end-objective is to fortify communities so that, through the use of social technologies, their representatives are able to continue the various projects independently. This makes it possible for the development cycle that results from mining activity, to be sustainable and self-perpetuating.

In 2015 Vale donated US\$14.8 millions to the Vale Foundation, with 46% of this amount donated being directly invested into operational areas, and taken into account in the social expenditure indicator ([see page 62](#)).



Check out the initiatives
of the Vale Foundation at
www.fundacaovale.org



Vale Foundation
works with health,
culture, sport and
job and income
generation

Strengthening
of public
policies is part
of the scope

Also, functioning
of partnerships
and social
mobilization



Márcia Foletto

US\$ **14.8** mi

Resources donated by
the company to Vale
Foundation in 2015 to
invest in social programs

Relationship With the Environment and Climate Change

- Climate Change and Energy
- Atmospheric Emissions
- Water Resources
- Waste
- Dam Management
- Mariana Accident
- Biodiversity

Climate change and energy

In 2015 global negotiations on climate change made progress with the adoption of Paris Agreement, a document that various countries committed themselves to limiting the global temperature increase to below 2 °C compared to the pre-industrial age, and to make best efforts to limit this figure to 1.5 °C. The agreement is innovative because it establishes that all the nations involved shall take on targets to reduce emissions, but its flexible as it takes account of different levels of contribution and national circumstances.

Vale intends to contribute to this collective effort with various initiatives and commitments expressed in its Global Climate Change Mitigation and Adaptation Policy, which includes Carbon Goal, in other words achieving a 5% reduction in its greenhouse gas (GHG) emissions in 2020,¹ and encouraging the members of its value chain to do the same. Therefore Vale is aligned with the Sustainable Development Goals (SDG) 13 – take urgent action to combat climate change and its impacts. Leaders of the company participated at the 21st session of the COP 21 meeting of the United Nations Framework Convention on Climate Change (UNFCCC) which took place in Paris in December. During the meeting, two publications were released, including the case study Meteorological Radar at the Capixaba Hydrological Monitoring Centre (CCMH in Portuguese) and its importance in Vale's adaptation strategy.

In addition to this, for the sixth time, the company was recognised during the year as one of Brazil's leading companies in terms of transparency, again forming part of the Climate Disclosure Leadership Index (CDLI),² of the CDP.³ Its inventory was once again awarded the Gold Seal from the Brazilian GHG Protocol Program.⁴

Vale reached the end of 2015 with 14.3 million tCO₂e of direct greenhouse gas emissions (Scope 1)⁵ and 1.9 million tCO₂e of indirect emissions (Scope 2)⁶. Scope 1 emissions increased by around 4% compared to 2014 as a result of the incorporation of emissions from Salobo and the increased production of pellets, mainly because of the Plant VIII map ramp-up, at Tubarão 8, especially at New Caledonia and resumed production at Onça Puma, compensating for the shutdown of some ferroalloys units, such as the manganese and fertiliser units. Scope 2 emissions were down

by approximately 9% compared to 2014, despite the increase in energy demand by the company mostly because of the reduction in the emission factor from electricity system in Brazil, Oman and Canada. **G4-EN15 | G4-EN16**

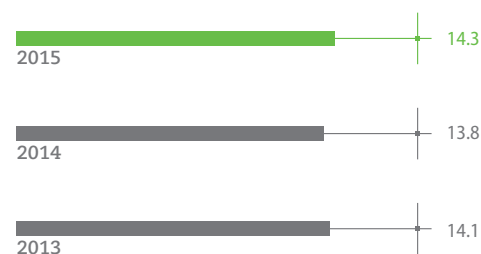
Whereas renewable emissions,⁷ from direct emission sources, were about 366.3 tCO₂e in 2015.

Vale's inventory according to the operational control approach has a rolling base year and includes the gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and a group of Hydrofluorocarbons (HFC). Methodologies, guidelines, potential global warming, references and emission factors adopted in the inventory are published annually on CDP and the Public Register of Emissions of GHG Protocol Program websites.

1. The Goal, taken in 2012, considers the difference between avoided emissions or reduced with the estimated actual emissions in 2020 if the company did not take any initiative regarded to this.
2. Available at: www.cdpla.net/sites/default/files/CDPLA%20Informativo%20Novembro_Lan%C3%A7amento.pdf, page 5.
3. Its global system give companies tools to measure, manage and share information about GHG emissions and other environmental themes: www.cdp.net/en-US/Pages/HomePage.aspx.
4. Prepared using an operational control approach, this uses a rolling base year and includes CO₂, CH₄, N₂O and hydrofluorocarbons (HFC).
5. Covers emissions from sources belonging to Vale itself or its subsidiaries, with the use of fuel and production processes.
6. Covers emission sources not controlled by Vale, referring to the purchase of electricity and vapor from the process.
7. Emissions from energy sources that are renewable, such as biofuels, solar energy and wind power. Adapted from GHG Protocol: www.ghgprotocol.org/files/ghgp/public/ghg-protocol-revised.pdf, page 101.

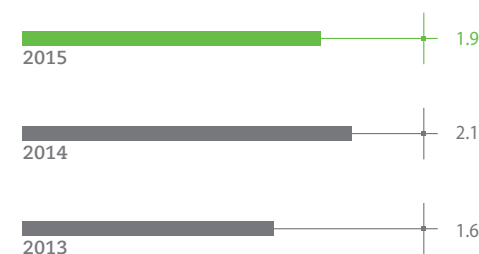
Greenhouse Gas Emissions

(Scope 1 – million of tCO₂e)



Greenhouse Gas Emissions

(Scope 2 – million of tCO₂e)



Mitigation measures

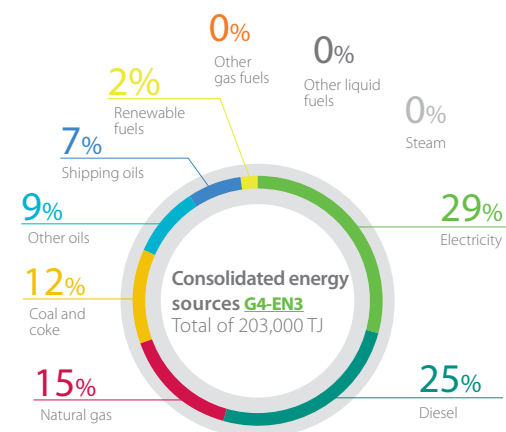
In 2015, Vale has developed plans for the annual monitoring of emission reductions of projects that are part of the portfolio of Carbon Goal, in order to ensure that its reduction target is achieved by 2020.

Considering the portfolio of projects of Carbon Goal and other additional projects, in 2015 Vale reduced its scope 1 emissions by about 1.0 million tCO₂e, and eight new projects were implemented as well as 18 other previous projects were maintained. In terms of reductions, the main projects are: 74% of GHG elimination (residual gas methane burning on coal mine and catalyst use for reduction of N₂O in nitric acid production); 21% of fuel exchange (replacement of fuel oil or LPG to natural gas); and 6% energy efficiency (such as replacement of equipment and process improvement as reducing average transported distance in mines). [G4-EN19](#)

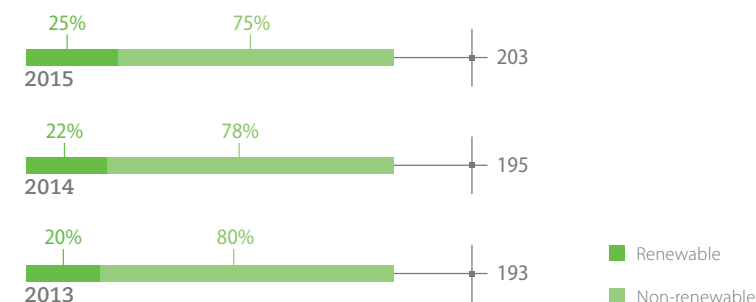
Energy consumption within the organization

Vale's energy matrix consists of around 25% renewable energy and 75% non-renewable energy, with diesel and natural gas being the prime energy sources. In 2015, the company's internal energy consumption amounted to a total of 203,000 TJ, and emissions from energy consumption amounted to 54.5 tCO₂e/TJ, slightly above last year. The increase in the electricity consumption base, despite the reduction in consumption by the manganese and ferroalloys units, is basically due to the expansion of the Salobo unit and the copper division in Brazil as a whole, due to the Itabirito Conceição unit coming into operation at Itabira, the Vargem Grande Itabirito project, as well as the VIII pellet plant. [G4-EN3](#) | [G4-EN18](#)

Electricity consumption (58,000 TJ) corresponds to 29% of the energy matrix. Of the total of electrical energy consumed at Vale, 51% was self-generated.



Consolidated energy consumption G4-EN3 (Total of 203,000 TJ/year)



The company developed actions to monitor the reduction of emissions

Of Scope 1 about 1.0 million tCO₂e was reduced

The project holds 74% of GHG elimination



Mauricio Moreira



25%

Percentage of the energy matrix of Vale corresponding to renewable energy

Marcelo Coelho

Direct and indirect energy

Non-renewable fuels	69.4%
Coal and coke	12.4%
Diesel	24.8%
Shipping oil ^I	7.4%
Other oils ^{II}	8.8%
Natural gas	15.4%
Other gas fuels ^{III}	0.4%
Other liquid fuels ^{IV}	0.1%
Renewable fuels ^V	2%
Electricity generated (own consumption-Indonesia and Canada)	5%
Electricity non-renewable GRID	5.4%
Electricity renewable energy GRID	15.8%
Electricity non-renewable OFF GRID	0.6%
Electricity renewable energy OFF GRID	1.7%
Consumed energy – renewable steam	0%
Consumed energy – non-renewable steam	0.1%
Total	100%

I. Marine diesel, IFO, MGO, MDO.

II. Oil, BPF oil, HFO, light distillate oil, residual oil.

III. LPG, HLR, propane, gas fuel.

IV. Gasoline, methanol, kerosene and jet fuel

V. Biodiesel, biomass, wood chips, charcoal, ethanol

Vale privileges renewable sources and energy efficiency, besides seeking to reduce emissions and costs

In 2015, investment in renewable energy came to a total of US\$30 million, with application in the generation of hydroelectric power and energy efficiency. Following the completion of the transaction with Cemig GT for the creation of the joint-venture Aliança Geração de Energia S.A., which thus became the holding company for the electricity generation projects and assets of the two companies, Vale and Cemig GT now hold equity stakes of 55% and 45%, respectively, in Aliança Geração.⁸ As a result of this transaction, the company holds direct and indirect equity stakes in nine hydro-electric plants (UHEs) and four small hydroelectric centres (PCHs) in Brazil. Through Aliança Norte, it also holds an indirect stake of 4.59% in Norte Energia S.A., the purpose of which is to build and operate the Belo Monte hydroelectric plant, in Brazil's Northern region. Overseas, Vale has three UHEs in Indonesia and five PCHs in Canada.

The emphasis of the initiatives on energy efficiency in 2015 was given on energy management, in other words providing data and information on energy consumption (electricity and fuel) in order to take actions to improve energy efficiency. Two particular projects were of note. One was the management of diesel consumption in the Ferrosos Sul mines, Brazil, which includes the installation of a measurement system on all the trucks and items of machinery and the adoption of mechanisms to capture and process the information collected for the

production of control indicators. The other was in Tubarão (Brazil), with the mapping of cargo movement routes and products, and the definition of their respective energy consumption, as well as the identification of requirements for the installation of measuring and communication systems, and the setting up of a consumption simulator.

These initiatives are evidence of the company's commitment to ensuring a competitive and sustainable energy supply, giving priority to renewable resources and energy efficiency in its operations, seeking to reduce costs and greenhouse gas emissions (GHG). **G4-EN19**

Energy intensity **G4-EN5**

Energy intensity indicators are monitored and used by the business areas. They are shown in different units of measurement, and depend on the activities being covered ([see page 28](#)).

8. More information on the agreement with Cemig Generation and Transmission SA are described in the Reference Form: www.vale.com/EN/investors/information-market/annual-reports/reference-form/Pages/default.aspx.





Fuel economy on the Carajás Railway (EFC) G4-ENG6

A visual tool to assist in decision-making by the traffic controller was created by the Carajás Railway (EFC) Operation Control Centre in order to reduce the number of stops for loaded trains in stockyards where there is high fuel consumption. The tool brings an estimated reduction in fuel consumption of 800,000 litres a year, with the railway operating under normal conditions. This volume is equivalent to the quantity needed to fill up 14,000 cars.

Along the railway, some stretches, particularly those that are inclined, require greater fuel consumption. The new solution indicates, using a colour scale, exactly where these locations are, so allowing controllers to adjust their train schedules to avoid stopping in these places.

Just by the controller being able to make a choice in this way, it is possible to obtain a reduction in fuel consumption of 708 litres per train.

Risks related to climate change

Mining is particularly susceptible to the impacts of climate change, as it is concentrated in specific geographical areas and involves fixed assets with a long working-life and value chains that are global in nature. The activities also include the management of water and energy resources, which are sensitive to climate and the expectations of different stakeholders.

Physical impacts such as increases in temperature, changes in precipitation patterns, extreme events and sea level rise (and their consequences, such as drought, flooding and cyclones) can affect operations, the labour force and the communities, as well as the surrounding environment. Among the possible implications of all this is interrupted production, need for repairs and modifications to infrastructure.

Vale believes that in taking measures to adapt to climate change is an opportunity not only to improve its internal processes and protect its assets, but it can also contribute to achieving its sustainable development targets in an integrated manner. Examples in this regard are: good management of natural resources, protection of biodiversity and sensitive ecosystems, as well as engagement with communities and local interest groups.

As a part of its strategy to climate changes adjustment, Vale has been working on the fusion of climate issues to its management risk process, as well as developing tools to assist the operational areas, such as maps of possible future impacts. The following diagram is part of an operation developed in the company with the purpose of translating existing information from respected scientific sources about susceptible future climate scenarios to a more accessible language to decision makers. In addition to informing the process of management risk, the map seems to be a good tool for awareness on climate change impacts.

PROBABLE CLIMATE IMPACTS IN BRAZIL – SUMMARY

NORTH

- **Temperature:** + 4.5 °C
- **Precipitation:** reduction of up to 60% in rainfall volume
- **Lightning:** increase of up to 90%

MIDWEST

- **Temperature:** + 4.5 °C
- **Precipitation:** possible increase of up to 10% or reduction of up to 20% in rainfall volume, depending on area
- **Lightning:** increase of up to 90%

SOUTH

- **Temperature:** + 3 °C
- **Precipitation:** possible increase of up to 10% or reduction of up to 20% in rainfall volume, depending on area
- **Lightning:** increase of up to 60% in lightning strikes

NORTHEAST

- **Temperature:** + 4 °C
- **Precipitation:** reduction of up to 60% in rainfall volume
- **Lightning:** increase of up to 80%

SOUTHEAST

- **Temperature:** + 4 °C
- **Precipitation:** reduction of up to 40% in rainfall volume in the north of the region; increase of up to 10% in rainfall volume in the south of the region
- **Lightning:** increase of up to 80%

For simulation of probable climatic impacts, the company has taken the IPCC's worst scenario case for climate change for the period 2071-2100

An average increase in temperature is forecast of between 3.0 and 4.5 °C, and increase of 80-90% in lightning strikes in all the regions. In precipitation terms, there is significant variation in the forecast for rainfall volume, but it is possible to affirm that there will be more extreme occurrences of rainfall and drought throughout the country.

An average increase in sea level is forecast of 4 mm/year, but this variable is also influenced by the transport of sediment at the coast (some areas may actually experience a retraction), so the recommendation is to assume a maximum value - increase of 82 cm by 2100. Although it is difficult to forecast changes in wind patterns, it is possible to affirm that the occurrences of strong winds will increase.

200

Number of trained suppliers
since 2011 to prepare GHG
Inventories


Concurso Vale NatGeo

Vale follows
trends to
anticipate the
standards

2%

Percentage of
coal in the portfolio

75%

of coal produced
by the company is
metallurgical

Beto Felício

In terms of regulatory risk, the establishment of a limit to emission or carbon taxes/charges could imply additional costs, both direct and indirect. This fact may have an impact both on commodity prices and shipping freight, for example, via regulations of International Maritime Organization (IMO) about the subject, decreasing the company's competitiveness.

Vale monitors global and regional regulatory trends and maintains relationships with governments, associations, academia and society in general, directly or through the forums in which it participates, as a way of anticipating and adapting itself to possible future regulatory demands.

A change in coal consumption patterns – due to the perception that it is a carbon-intensive emitter – could impact demand for this commodity in the future. However, besides representing only 2% of Vale's portfolio, 75% of the coal the company produces is metallurgical, essential for steel production and for which there are no economically viable alternatives.

On the other hand, greater demand for products that are less intense in carbon emissions could have a positive impact to the company, seeing that Vale's carbon per unit of gross revenue is one of the lowest of the major mining companies. [G4-2](#) | [G4-EC2](#)

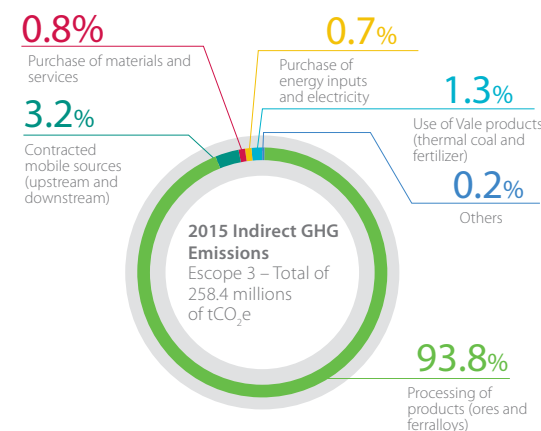
Value chain emissions

In 2015, Vale continued with its Carbon Program in its value chain, training 13 suppliers in the state of Pará and analysing compliance with its standard contract clause,⁹ which aims to incentivate the management of emissions in the value chain. As a result of this initiative, since 2011, more than 200 suppliers were trained in the preparation of GHG inventories. In compliance with this clause, Vale received 110 inventories during the year, which represents 44% of the spend in the categories identified as critical in emission in terms.

9. Since 2012, the Vale's standard contracts contain a voluntary clause applicable to categories of suppliers that have the most emissions (critical categories), which requests the sending in of GHG emission inventories from these suppliers.

10. The following categories are not accounted for under Scope 3: residues generated, being not material; treatment of the life-cycle end of products sold, leased and franchised assets, as they are not applicable; and investments, because they have not yet been calculated.

Emissions under scope 3, calculated along the value chain, totalled 258.4 million tCO₂e, and indirect renewable emissions totalled 5.3 thousand tCO₂e in 2015. The chart below presents Vale's scope 3 emissions by category.¹⁰ [G4-EN17](#)



*Capital goods, employee air travel, contracted employee ground transport.

Atmospheric emissions

Vale maintains its commitment to continuously improve control mechanisms for atmospheric emissions and invested US\$132 million in initiatives aiming at improving processes and control systems related to the themes, as well as improving management.

In mining, the most significant atmospheric emissions are of particulate matter from diffuse sources (fugitive emissions), as traffic on unpaved roads, exposed areas subject to wind, handling of loose materials and rail transport.

Various measurements are used to control diffuse emissions, including sprinkler systems, the application of dust suppression agents, enclosures, wind fences¹¹ and re-vegetation of embankments.

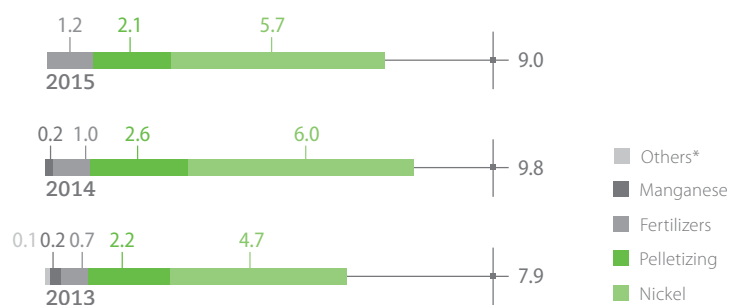
Among other projects, of particular note in 2015 was the conclusion of the glycerin application systems modernization on the pellet routes at all the Tubarão Complex in Espírito Santo (Brazil) units, which permitted an increase of more than 100% in the volume of glycerin used, and consequently improvement in the control of the unit's atmospheric emissions.

Emissions of particulate matter were 8.5% lower than in the previous year, principally as a result of the shutdown of various operations to resolve operational control system problems that occurred in 2014.

11. Wind barriers surrounding the product stockyards and reducing drag dust.

Particulate matter emissions

(in thousand metric tons)



*It includes coal and copper emissions.

US\$132 million

invested in improvements related to
Atmospheric Emissions

Nitrogen oxides (NOx) G4-EN21

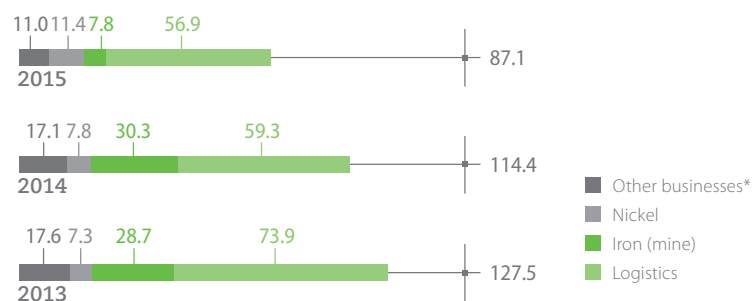
Combustion processes are the main responsible for emission of nitrogen oxides (NOx), and the quantity of these gases is directly related to the total of fuel consumed. Thus, emissions are calculated based on specific emission factors per type of fuel and the equipment in which it is used. Some emission sources had their quantities of NOx obtained through direct monitoring of the exhaust gases discharged into the atmosphere.

The perceived reduction in the total emissions of nitrogen oxides over the last two years is due to improvements implemented in control systems and in operational processes, as well as the shutdown and sale of assets.

*Other business	2013	2014	2015
Fertilizers	7.0	7.3	4.5
Copper	2.8	2.6	0.7
Pelletizing	2.3	2.2	2.2
Coal	4.4	4.6	3.5
Manganese	0.8	0.1	0.0
Biopalm	0.4	0.3	0.1
TOTAL	17.6	17.1	11.0

Nitrogen Oxide (NOx) emissions

(in thousand tons)



US\$572 million

Total of environmental expenditure of Vale by the end of 2015



It is estimated that global consumption of water will increase 40% by 2020

28%

Percentage of environmental expenditure destined to water management

Sulphur oxides (SOx) G4-EN21

Emissions of sulphur oxides (SOx) are derived from some production processes and burning of fuel. Emissions from industrial processes assume that all of the sulphur added in the process and not in the products or residues is released into the atmosphere in the form of SOx. In some processes, exhaust gases were directly monitored to determine the quantity emitted. Emissions from burning of fuel are calculated from the quantities consumed and their sulphur content.

SOx emissions have remained stable in the last few years with small variations from shutdowns (reduction of truck fleets of the company and third party, for example), assets sales (such as Valemax ships), replacement of fuel (natural gas/oil) and increase in productivity.

Water resources

The Water Resources theme was the focus of the Global Economic Forum held in January 2015 owing to the fact that for the first time it was top of the list of main global risks, in impact terms. According to the 900 executives consulted for the production of the list on an annual basis, world water consumption is likely to increase by 40% by 2030, driven by its use in agriculture which needs to raise food production by 50% over the next 15 years, and for the generation of electricity, for which its consumption is expected to expand by 85%, by 2035. Faced with this situation, there is strong pressure for the production sectors and society to carry out the rational use of water resources.

Vale is aligned with this requirement and manages its water resources based on three key elements: Compliance, Conservation and Optimization. The company recognises the interference caused

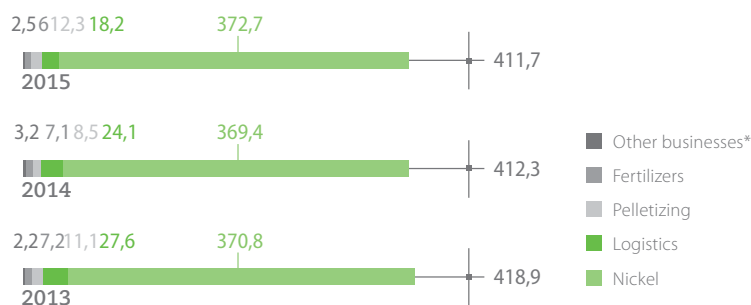
by its activities and takes steps to guarantee water conservation, protection and quality. To this end, it invests in technologies and initiatives to control total demand of this resource, and initiatives which exceed basic legal requirements. In 2015, these initiatives totalled US\$ 161 million, these represented 28% of the company's total environmental expenditure (US\$ 572 million).

In a year which saw prolonged periods of drought in regions unaccustomed to dealing with water shortages, such as the Southeast in Brazil, new challenges emerged which required the development of alternative means for domestic water supply and water supply for the production sector.

An innovative alternative was automation of the off-road truck washing system in the Northern Region in Brazil, which provided more security,

Sulfur Oxide (SOx) Emissions

(in thousand tons)



*Manganese, iron (mine), copper, coal, biopalma and Vale Florestar emission.

Compliance, Conservation and Optimization are the three key elements for water management in the company

50% reduction in cleaning time and the re-use of up to 80% of water. The water used in this system comes from collecting rainwater drainage at the central workshop area and the treated effluent of the oil-water separator system.

As to improving and monitoring, of particular note was the Integrated Surface Water Monitoring Network, begun in 2012 at the units in Minas Gerais and replicated for the units located in the Rio Itacaiúnas basin, in Pará. In the Southeastern region, basins of Velhas, Paraopeba, Santo Antonio, Carmo and Piracicaba rivers, the project was approved by the Minas Gerais Water Management Institute (IGAM) and is undergoing analysis by the Regional Superintendency for Environmental Regulation

(SUPRAM). Its objectives are to encourage the exchange of monitoring data between the different undertakings, and carry out a joint analysis; identify variations and temporal trends; to gauge the performance of environmental controls in place at the different undertakings; and to establish joint action plans, including the definition of indicators with a view to conserving and improving the quality of water in the areas under study.

As disclosed in the previous report, in relation to the theme Water Footprint, Vale completed and evaluated the results of the pilot project in Ferrous units and understands it is necessary to define some criteria for adopting this indicator.

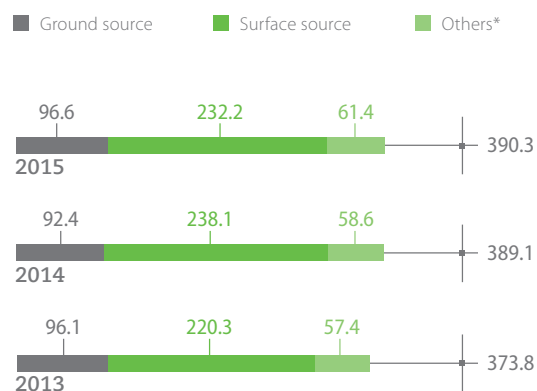
In 2015, the total amount of water extrated totalled 390.3 million m³, of which 31.9 million m³ was allocated for use by third parties. Subtracting this volume, it can be seen that in its processes, Vale used a total of 358.4 million m³, which represents a reduction of 1.8 million m³ compared to the previous year (360.2 million m³). The percentage and quantity of water recycled and reused in the year came to, respectively, 82% and 1.6 billion m³, volume which is equivalent to 640 thousand Olympic swimming pools. The increase in the indicator relative to 2014 is due to new processes, considering the monitoring of the reused water and wastewater and the expansion of this existing processes. The volume discharged, in turn, amounted to 258.1 million m³, down 13% compared to the previous year. [G4-EN8](#) | [G4-EN10](#) | [G4-EN22](#)

In general, in the case of water capture, data is obtained through direct measurement. In some units, data related to discharge of wastewater and reused water is estimated. Vale is continuously improving its measurement processes.

On the next page, the distribution of Vale's units around the world is presented in account of the mapping of water stress by region, performed by Aqueduct – World Resources Institute.

Water by type of extraction

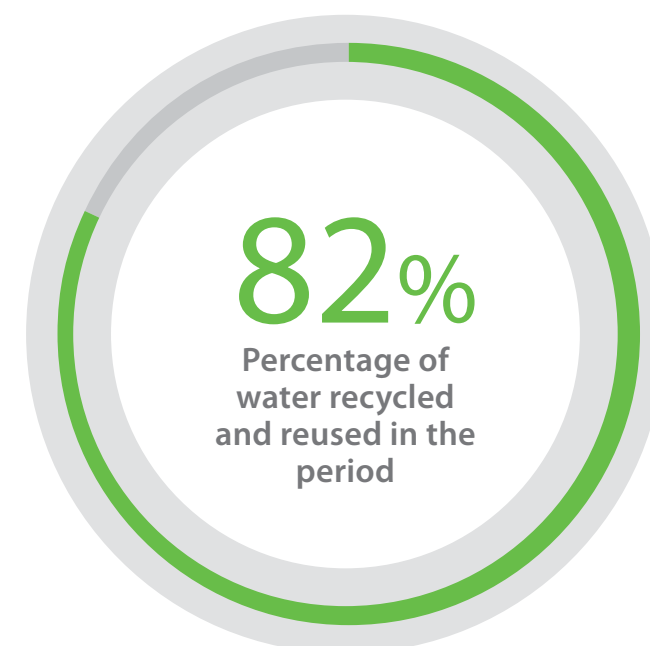
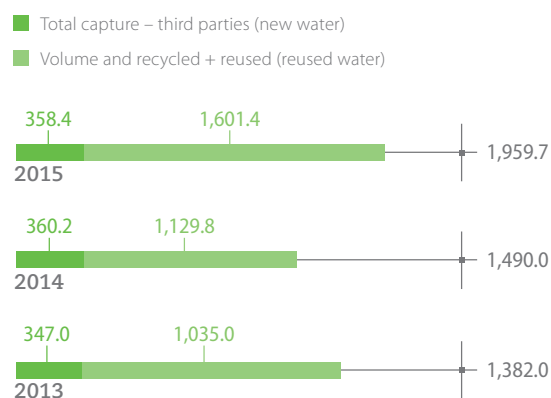
(in million m³/year)



*Rainwater capture and water supply from other organizations to be used on Vale's processes. Rainwater captured by Vale exclusively for the use of third parties is also included in this category.

Total demand

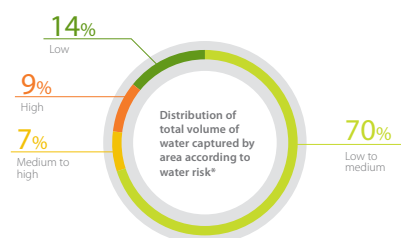
(in million m³/year)



New water capture map by Vale's operations according to water risk areas

● Vale's operations

Water risk category

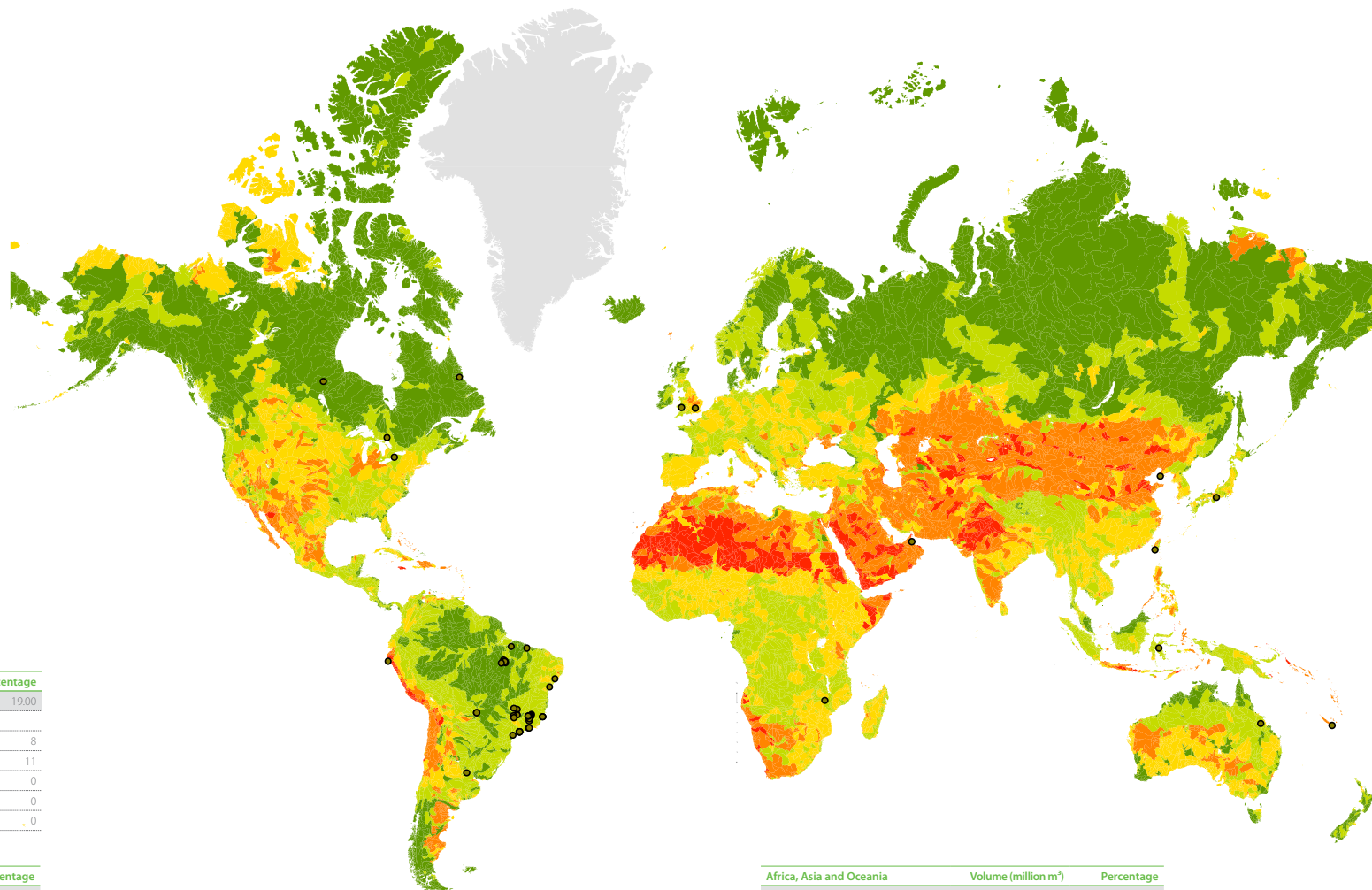


*As indicated by Aqueduct – World Resource Institute.

North America and Europe	Volume (million m ³)	Percentage
Total volume of water by area	76.0	19.00
By risk category		
Low	32.8	8
Low to medium	43.2	11
Medium to high	0.0	0
High	0.0	0
Extreme	0.0	0

South America	Volume (million m ³)	Percentage
Total volume of water by area	268.7	69
By risk category		
Low	24.4	6
Low to medium	210.2	54
Medium to high	17.7	5
High	16.4	4
Extreme	0.0	0

Africa, Asia and Oceania	Volume (million m ³)	Percentage
Total volume of water by area	45.6	12
By risk category		
Low	0.0	0
Low to medium	18.9	5
Medium to high	8.4	2
High	18.3	5
Extreme	0.0	0



14%

Quota of
environmental
expenditures
dedicated to waste
management in 2015



Vantoen Pereira Jr

96%

of residues generated by
Vale's operations in the
year are considered non-
hazardous



Salviano Machado

Waste

For the 2014 Sustainability Report, the materiality matrix was drawn up according to the GRI G4 guidelines and, at the end of the process, the theme Waste was classified as being not material. In the correlation between stakeholders' view (axis of influence) and the management of ESG environmental, social and governance impact (axis of impact) referring to Vale, non-mineral waste, as well as minerals, were excluded from the report. However, even though this theme was not considered in the report published in 2014, the respective indicators remained as part of the internal agenda for the management of sustainability performance. In 2015, after the review of the process and a more in-depth look at the materiality, this theme was highlighted for its importance, and therefore is now again part of the 2015 Sustainability Report.

Non-mineral waste [G4-EN23](#)

Vale maintains a program for the management of its residues focused on minimization, segregation, traceability, valuation, and proper disposal, as well as fostering job creation and income generation from recycling practices. In 2015, US\$78.4 million was invested in waste management (13.7% of the total environmental expenditure).

All the waste generated by the company are sent to companies that undergo an environmental evaluation and auditing process, so as to minimize operational risks. During the year, 106 audits were carried out, from a total of 277 companies registered.

As part of the waste management program, the operational areas adopt indicators and goals to reduce its generation. In addition to this, there are indicators to encourage sustainable disposal,

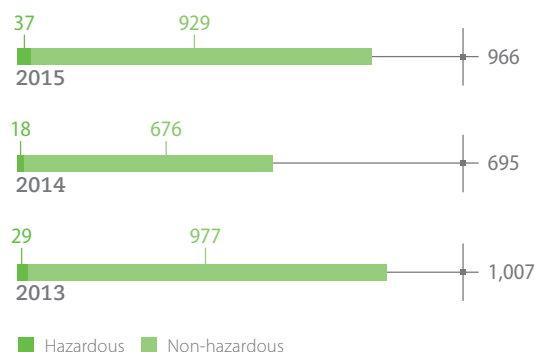
which include composting, re-using, re-refining and recycling – prioritizing re-use and avoiding disposal in landfill. For example, 92.5 tons of residue were sent to recycling co-operatives in the states of Minas Gerais and Espírito Santo, encouraging the generation of jobs and incomes in the recycling chain, in Vale's operational region.

During the year, operations resulted in 966,000 tons of residue generated, 96% non-hazardous and 4% hazardous. The principal waste generation areas were nickel (37%) and fertilizer (31%). This volume is about 39% higher than in 2014. The increase in the generation of non-hazardous waste was 37%, compared to 2014, most of which consisted of sludge in Uberaba, Minas Gerais, and wastes from construction at Sudbury, in Canada, which together represented a 70% increase. The generation of hazardous waste also saw an increase, of 106%, on the same comparison basis, basically attributable to the units in Oman, the Moatize Mine and the Carajás Mine. The increase at Moatize is related to the updating of the methodology for collecting data from the unit, having now incorporated some wastes that were disregarded in previous years. The expansion in Oman refers to a programmed stoppage at the plant, which generated a large quantity of maintenance residues on a one-off basis, falling outside the normal residue generation profile of the unit.

With regard to the waste disposal, 49.8% was disposed in landfill and 48.0% went to recycling processes.

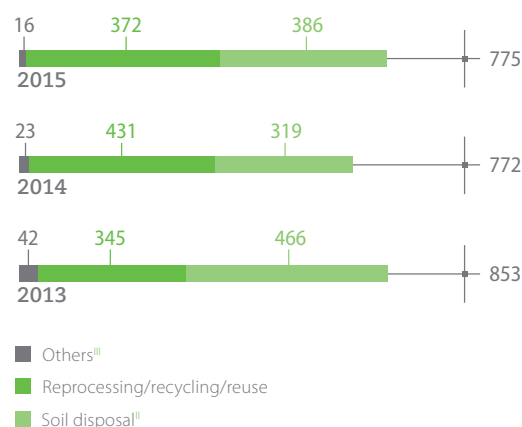
Consolidated amount of generated waste G4-EN23

(in thousand metric tons)



Disposal and destination of waste^I G4-EN23

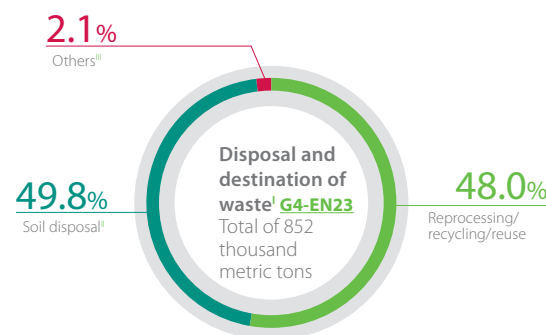
(in thousand metric tons)



I. Differences between the amount of waste generated and the amount of final disposal are due to temporary storage.

II. Plastics, paper and cardboard, textiles, tarpaulins and polymers, glasses, patios waste and refractories.

III. Health services waste, batteries, asbestos waste and wastes containing heavy metals.



Mineral waste MM3

Vale's commitment to environmental and social issues is also evident in the way it manages its mining waste from the production process. These materials are disposed of in tailings dams (containing tailings and sediments) or piles (containing waste rock and tailings), and its volume varies according to production and the geological characteristics of the locality.

The company continually invests improvement, systems and instruments for the automation of dam monitoring. In this way, it has been reducing the generation of mining and metallurgical waste every year: decrease of 8.1%, 7.3% and 3.3%, in 2013, 2014 and 2015, respectively, in relation to every previous year, totalling, in millions of tons, 813 in 2013, 753 in 2014 and 728 in 2015. The volume last year was distributed between 325 million tons of waste rock and 70 million tons of tailings, both of iron ore, and 334 million tons related to other businesses.¹²

12. Includes waste rock and tailings from mining nickel, potassium, manganese, coal, copper and slag (manganese alloy), and fertilizer by-products.

Transport of dangerous products G4-EN25

Vale employs responsible practices throughout its production process, including transport of dangerous products, which is preceded by an assessment to identify any significant risks, and any proposed mitigation and prevention actions needed to keep these within tolerable limits. Any incidents are recorded and submitted to an extensive evaluation process of the underlying causes in order to establish corrective measures, and re-evaluate the procedures in use.

This process is applied to inputs, raw materials and end-products, taking into account applicable legal requirements, as well as the authorisations and permissions required for transport. Analyses are carried out for the purchase of new inputs or raw materials, or for the implementation of new transport modes.

The transport of dangerous products across borders, originating at Vale's units, is regulated by the Basel Convention. This convention establishes international mechanisms of movements control based on the principle of prior and explicit consent for import, export and transit of such residues. Besides, all Vale's comply with specific legal requirements of each place.

In 2015, on the international front, cross-border transport of dangerous products only took place at the operational unit in New Caledonia, as being a relatively small island territory, it does not have a centre for the treatment of hazardous waste. As a consequence, a total of 1,028 tons of hazardous waste were transported, principally to Australia and New Zealand, in accordance with agreements signed between those countries.



Use of waste in the cement industry

Many initiatives are being developed at Vale to recover and reuse mineral waste and to use the material in industrial processes. One of the initiatives is the Sustainable Waste project, which seeks to reuse waste rich in silica in the cement industry. The material has the potential to be used as a corrective element and to replace the primary sand, non-renewable, in the process of producing cement. In the initial stage of manufacturing, between 1% and 5% of silica is added to flour (mixture of raw materials to produce the clinker). The amount of silica depends on the characteristics of limestone and clay available in each cement production unit. The chemical composition of the flour differs depending on the geological layer that is in exploitation. In recent years, the cement industry in Brazil has produced about 70 million tons per year, using 0.7 million to 3.5 million tons of silica.

The product is vital to minimize chemical variations during the production of clinker, optimizing the control of three important indicators: Lime Saturation Factor, Silica Index and Alumina Index.

In many cases already tested, the silica content in Vale's tailings exceeds the silica content of primary sources, which may represent a competitive advantage for the cement companies.

In addition to silica, cement units use iron-rich materials such as pyrite, to control the levels of iron oxide. The three indicators that reduce chemical variations require some amount of iron oxide. The fact that the tailings full of silica also contain residual iron ore may, therefore, represent another advantage over primary sources of sand and secondary sources of silica. On the other hand, residual iron ore in excess can impair the quality control in cement units; therefore, tailings full of silica (and poorer of iron) are more appropriated.

In March 2014, the United Nations Environment Programme published a warning about the fact that the sand is becoming a scarce resource, whose withdrawal became profitable. In this scenario, the goal of re-use of Vale's waste as an alternative source of non-renewable primary sand gains urgency and purpose.

Significant spills

In 2015 it was recorded four spills¹³ considered critical, one of them involving dangerous products. These events can have significant environmental consequences, which leads the company to implement emergency response plans to minimize the effects. The units involved acted in the proper mitigation of the impacts, the analysis of incidents and the adoption of preventive measures to avoid recurrence. All reported spills were informed to the competent environmental authorities, who have adopted the relevant measures. [G4-EN24](#)

Dam management

The refining process for iron ore aims mainly the regularization of granulometry, elimination of non-economic minerals and adaptation to the quality required by the market. In this regard, the choice of the processing type is directly associated to the characteristic of the deposit that is being explored. Some ores only require crushing, sieving and classification to meet the market specifications. In such processing, wastes are not generated because the extracted ore becomes a product.

However, there are other types of ore that need to go through concentration processes. That is, when there is waste that must be disposed of properly. In general, that provision is made in tailings dams, which are structures constituted basically of a solid barrier and a reservoir containing the solid and liquid residues. The barrier can be made from compacted soil (conventional landfill), blocks of rock (rockfill) or tailings, and it has internal drainage systems to assure the proper conduct of the water that runs through the solid barrier.

¹³. Significant spill corresponds to critical or catastrophic incident, that is, those that go beyond the property boundaries of the operation and have a significant environmental impact.

It is common to build tailings in different stages, beginning with a solid barrier or starter dike, in conventional landfill, and it evolves according to the operation needs, by successive heightening until it reaches its end point. Heightening can run for three construction methods: upstream, downstream and center line. As a building material, these heightening can be built on land (landfills), as starter dike, or the waste itself.

At Vale, the dams are also used for reservation of water and sediment retention. Unlike tailings dams, they are generally built in a single step and always in conventional manner with compressed landfill.

Considering Vale's Ferrous dams, 80% are built conventionally and/or heightened by the downstream method, as shown in the following table.

Regarding the size of the pond of these structures, 81% are considered small, 13% medium -sized and only 6% large.

In tailings dams from iron ore, the material contained in the ponds is composed mostly of silica (sand) and it shows no chemicals harmful to health.

Currently, Vale has 168 dams and dikes implemented (RAL 2015 – base year: 2014) and registered in the National Mining Production Department (DNPM). To develop projects for new dams or heightening, Vale uses as reference the standard NBR 13028/2006, as well as the guidelines of projects of renowned international organizations such as the International Commission on Large Dams (ICOLD).

Vale's dams are operated by adopting advanced engineering techniques that follow strict controls, as well as systematic monitoring and annual external audits to ensure safety.

At a federal level, Vale's dam management meets the Law No. 12,334/10, which establishes a National Dam Safety Policy, and the Decrees No. 416/2012 from the National Mining Production Department (DNPM), which creates the National Register of Mining Dams and covers Dam Safety Plans (PSB); No. 526/2013, which establishes conditions to the Tailings Dam Emergency Action Plans (PAEBM); and No. 14/2016, about deadlines to submit proof of delivery of physical copies of PAEBM to the local governments and municipal and state Civil Defenses, in accordance with the DNPM Ordinance No. 526/2013, or the presentation of the Declaration of Dam Stability Condition According to DNPM Ordinance No. 416/2012.

Goal	Total of structures	Heightening method/Status					
		Downstream and conventional		Center line		Upstream in stages	
		Initiative	In operation	Initiative	In operation	Initiative	In operation
Tailings disposal	56	13	27	1	5	8	2
Sediments containment	78	15	52	1	4	2	4
Reservation of water	9	1	7	0	1	0	0
Total	143	29	86	2	10	10	6
		115		12		16	

In Brazil, Vale has 168 structures; 143 of them are iron ore business.

In the state of Minas Gerais, Normative Deliberations COPAM No. 62, 02/17/2002, and No. 87, 06/17/2005, determine the implementation of periodic external audit, but Vale already executes it in frequency beyond the established by legislation, with renowned external auditors who are recognized for their skills in identifying risks associated with dams. Additionally, Vale has internal controls in accordance with the recommendations of the auditors into categories, by their criticality, as shown in the following table.

Vale has never had a recommendation type 5 and currently has no recommendation type 4. That is, there are only recommendations classified as programmable or of corrective maintenance and/or preventive character. For all recommendations Action Plans are elaborated, registered with the state environmental agency and accompanied by the company's managers, by inspection agents and the auditors.

The dams security management is performed by dedicated and qualified staff whose mostly professionals hold master's, doctoral or specialization degree in Geotechnical Engineering and/or Dam Engineering. These structures experience visual inspections and are monitored by instruments that inform about the structural behavior. The visual inspections are performed every two weeks and include detailed checklist that covers different items for evaluating the conservation status of the structure and identifying potential problems with it. This allows management to be proactive and preventive.

The information seized in the inspections and the data obtained from monitoring the instruments implemented in the dams are recorded in auditable systems and analyzed by geotechnical engineers, who often assess whether the conditions raised in the field and the reading levels of the instruments are consistent with the conditions of normal operation of the structures. In addition to the inspection and monitoring routines, they undergo periodic and routine maintenance, such as cleaning of drainage structures and extravasation, weeding, recovery of small erosions, restoration of embankments covers, among others; to ensure proper storage conditions for their good performance. At Vale, all dams, although they are no longer in operation, remain under the company's responsibility and are monitored, audited and maintained usually under the same criteria and safety standards adopted during its operation.

With respect to emergency management, in order to meet the requirements of the ordinance No. 526/2013 of the DNPM, which establishes conditions to the presentation of the Tailings Dam Emergency Action Plans (PAEBM) and No. 14/2016, which establishes deadlines to submit proof of delivery of physical copies of PAEBM to the local governments and municipal and state Civil Defenses, Vale filed in June of 2015 the PAEBMs of its 50 dams classified as Associated Potential Damage (DPA) High (DNPM Ordinance No. 416/2012).

Proactively, Vale's PAEBMs are being revisited in order to incorporate the learnings accrued from the failure of Fundão dam, as well as results obtained in several discussions that the company has been promoting with the communities located near the dams, with the state and municipal Civil Defenses and regulatory agencies. These actions are being implemented in all states where Vale operates.

Furthermore, in spite of compliance with current legislation and investing in security and dam risks management mechanisms after the accident in Mariana (MG), to bring greater comfort to society, Vale carried out a detailed extraordinary verification of the structural conditions of all its tailings dams, including access roads, tailings ponds, crests, berms, slopes, surface drainage, internal drainage systems, abutments and overflow

Type of Recommendation	Anomaly Classification Criteria
● Type 1	Character of preventive and periodic maintenance
● Type 2	Character of corrective maintenance
● Type 3	Intervention of programmable engineering to guarantee security and performance of the structure
● Type 4	Intervention of prompt engineering and corrective measures to guarantee security and performance of the structure
● Type 5	Dam failure is likely to happen

systems. From the Vale's ferrous metal division, 18 geotechnics professionals, as well as a number of office teams, worked on an emergency basis, contributing to the speed of the inspection results. No alterations were found in any structure.

Since the failure of Fundão dam, on November 5, 2015, Vale has undertaken several inspections and surveys of regulatory agencies, especially the DNPM. During the inspections, the professionals of the agencies have been accompanied by teams of Vale while visiting the dams to assess the conservation status of the structures. Documents related to monitoring have been assessed and the results compared to the normal operation of the structures. Also during the surveys, Vale has been asked to provide documentation related to the dam management as well as action plans related to external audit recommendations. In all cases, the company has contributed proactively with the inspection agents, promptly submitting the documents requested and attending to any recommendation and/or demand set during inspections and surveys.

At the end of 2015, as an immediate response to the accident and with the objective of increasing the good operational practices, Vale created a unified area dedicated to managing iron ore dams, performed before separately for each operation. In this first stage, the area will be responsible, among other activities, for Geotechnical management case (dams, piles, embankments, etc.) and plans and actions in case of any emergencies. Actions for incorporation of other businesses have been started and throughout the year they will be expanded to other business units of the company.

Mariana accident

November 5, 2015 joined the mining history as a sad milestone. The failure of Samarco's Fundão dam, a mining company, in Mariana (MG), to which Vale is a shareholder along with BHP Billiton, resulted in 18 deaths and a missing person, and hundreds of families were made homeless. From the first moment, Vale is committed to support Samarco in serving the affected people, and is making every effort to minimize impacts on the environment. The company has provided human and material resources, such as helicopter and emergency equipment, to support Samarco in the rescues, water distribution and removal of the risky places for people displaced by the accident.

Samarco was formed in 1977 as a Brazilian unlisted company. Between 2000 and 2001, Vale acquired a stake in Samarco, ending up with 50% of the company's shares together with BHP, holder of the other 50% of Samarco's shares.

According to Samarco, 99% of the families in Mariana and Barra Longa impacted by the accident ended 2015 in rented homes or at relative's homes, and all the houses rented by the company were equipped with furniture, home appliances, domestic utensils and bed linen and towels, preferably acquired from region's suppliers. Before each family moved in, the company also supplied the homes with food, cleaning and personal hygiene products, and drinking water.

In January 2016, each family with missing or deceased members due to the accident, received R\$100,000 (US\$31.6 thousand) in advance compensation payment from Samarco. The family groups who had to move, i.e.

In addition to the installation of service centers in communities with mining areas to centralize the demands, meetings were held with communities and other stakeholders for joint actions

those who lost their homes, Samarco released R\$20,000 (US\$6.3 thousand), with 50% of this amount not being considered as part of the advance compensation.

Periodic meetings were also held with communities, municipal authorities, state and federal governments, the environmental authorities, the Public Prosecutor Service, the Public Defender's Office and other responsible authorities, to provide clarifications and information about Samarco's action, and to develop joint initiatives. Also, service centres were set up in Colatina, Linhares, Marilandia and Baixo Guandu, in the state of Espírito Santo, and in Mariana and Barra Longa, Minas Gerais. The objective is to centralize demands, questions and claims from the community, facilitating the services and the tracking of solutions.

Through the use of debit and credit cards, Samarco provided emergency financial assistance to those families that lost their monthly incomes as a result of the accident. This involves the payment of a monthly minimum salary to the family, plus an additional 20% of a minimum salary to each dependent, as well as a basic foodstuff basket in monetised form, to the value of R\$338.61 (US\$107.1– reference value from the Union for Socio-Economic Statistics and Studies – Dieese for Minas Gerais). In the Rio Doce river region, 811 fishermen and other riverside dwellers received these cards.

In both municipalities, Samarco and its partner companies hired local inhabitants to take part in the refurbishment of property, fencing and rehabilitation of agricultural properties, revegetation, organization of donations and care of the animals rescued.

With regard to the residues, Samarco monitored the behaviour of the plume of turbidity in the sea and it stressed that there was no technical evidence that the material observed in the region of Abrolhos, in Bahia, originated from the failure of the Fundão dam. The waste is mostly composed of silica (sand) arising from iron ore processing, and it does not contain any chemical elements harmful to health. The results of analyses Samarco commissioned from SGSGeosol Laboratorios, a company specializing in environmental and geochemical soil analysis, attests to the fact that the waste from the Fundão dams is characterized as not dangerous. This information is based on the results of leached extracts, once the results of solubilized extracts remain in the analysis process. Samples were collected on November 8 near Bento Rodrigues, Monsenhor Horta, Pedras, Barretos and Barra Longa, in Minas Gerais, and they were analysed in accordance with the Brazilian standard ABNT NBR 10004:2004.

In addition to this, the diagnosis carried out by a specialist consultancy (ACQUA Consultoria) confirms that shoals of fish continue to live along Rio Doce river. This study was carried out from December 3 to 11, 2015 at 215 points along the river and it also revealed that less than 1% of the river basin was affected by the accident. The results of the new analyses performed by the Geological Survey of Brazil (CRPM) and the National Water Agency (ANA), disclosed on December 15, 2015, also show that the Rio Doce river's water quality was compatible with results found before the mud plume of turbidity passed down the river. With respect to the presence of heavy metals dissolved in the water, the levels of arsenic, cadmium, mercury, lead, copper and zinc, among others, are in general similar to the results of studies carried out by the CPRM in 2010.

Vale, Samarco and BHP Billiton signed, on March 2, 2016, a full agreement with the Attorney General of the Union, representing the Union's Public Prosecutor's Office, with the state governments of Espírito Santo and Minas Gerais, as well as other authorities such as IBAMA, the Espírito Santo State Institute for the Environment and Water Resources (IEMA in Portuguese), and the Minas Gerais State Environment Foundation (FEAM in Portuguese), to the environmental and socio-economic recovery in the regions impacted by bursting of the Fundão dam.

The agreement tells the creation of a private right foundation that will be responsible for the performance of about 40 repair programs. The programs will be gathered into two main work fronts: one socio-economic and other environmental. The foundation will be maintained with resources from Samarco. All projects may be accompanied by the affected populations, there will be external audits and an ombudsman to serve the community.

The amounts provided for in the agreement for the first three years are R\$4.4 billion to fund the projects. From 2019, annual contributions to the foundation will be set according to the forecast of annual project execution. In 2019, 2020 and 2021, the annual values for these contributions will be between R\$800 million and R\$1.6 billion. Additionally, it is decided that in the next 15 years, from 2016, will be invested R\$240 million per year for compensatory actions. These annual values for compensatory actions are already included in the total for the first six years. Additional R\$500 million will be made available by the company, as a compensatory measure, for basic sanitation construction, which will be held by impacted municipalities by the end of 2018.

The foundation headquarter will be located in Belo Horizonte (MG) and will have a Board of Trustees, Executive Board, Advisory Board and Fiscal Council, with autonomy to manage and perform all recovery actions and compensation for damage caused by failure of the Fundão dam. Also, it will hire technical experts and independent audits. It will also set up an Inter-Federative Committee, external and independent body of the foundation, constituted of 12 government representatives, to monitor and validate the proposed plans, monitor and verify the results.

Examples of environmental projects

- Availability of resources, as compensation and with the amount of R\$500 million, for certain affected municipalities to use in the preparation and execution of plans for capture and sewage and landfills treatment.
- Recovery of Permanent Preservation Areas (APP in Portuguese) of Rio Doce river and affluent through reforestation of 10,000 hectares and conducting natural regeneration of 30,000 hectares over ten years as compensation and the amount of R\$1.1 billion.
- Recovery, as compensation, of 5,000 springs to be defined by the Watershed Committee of Rio Doce.

Examples of socioeconomic projects

- Reconstruction of the affected sites, as Bento Rodrigues, Paracatu de Baixo (Mariana) and Gesteira (Barra Longa), ensuring their participation in the dialogue process with the affected communities to define measures for the recovery or relocation.
- Performance of compensation and reparations program, through coordinated negotiation, designed to repair and compensate the affected people, of optional adherence.

- Establishment of permanent communication and dialogue channels with the community, as well as carrying out agendas to present the progress and results of the programs to be implemented.
- Implementation and maintenance of support measures for affected indigenous peoples.
- Recovery of cultural goods of material nature and preservation of cultural property that was impacted.
- Implementation of actions that aim at recovery of impacted economic and productive activities, such as agriculture, fisheries, services and trade.
- Health programs, social protection and education for the restoration of impacted public services and monitoring of individuals and families affected are also planned.

The information presented in this chapter refers to this report closing date. For updated information, please access the Vale's website: www.vale.com/brasil/PT/samarco/Paginas/default.aspx



Financial management of the foundation

How will the financial management of the foundation be accomplished?

Subsequent years

R\$4.4 billion

+ R\$500 million for sanitation to be delivered in the first 3 years



R\$2 bi
(R\$240 million^I)

+ R\$50 million^{II}



R\$1.2 bi
(R\$240 million^I)

+ R\$200 million^{II}



R\$1.2 bi
(R\$240 million^I)

+ R\$250 million^{II}



R\$800 million to R\$1.6 billion
(R\$240 million^I)



Total be determined^{III}
(minimum of R\$240 million^I)

^I. For compensatory actions. The value is part of the foundation's budget.

^{II}. Integral value of the total of R\$500 million for sanitation. This value is not part of the Foundation's annual budget.

^{III}. Based on further studies and technical analysis.

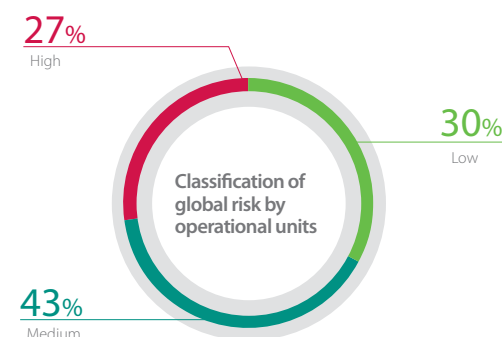
Biodiversity

Vale develops its global biodiversity strategy, in alignment with its Sustainable Development Policy, in order to mitigate land usage impacts, reclaiming and conserving territories in the regions where it operates. For this, it considers significant ecosystem services¹⁴ associated with water, climate change, energy and the community, as well as specific aspects of the regions with a goal of achieving a net positive impact over the long term.

In 2015, with a greater commitment to advance the discussions and studies on the theme, in partnership with institutions and other businesses Vale assumed the presidency of the National Confederation of industry's (CNI) Water Resources Network (CEBDS in Portuguese)¹⁵.

Biodiversity management

One of the initiatives developed by Vale in 2015 was classifying its operations' biodiversity-related risks at a global level. A total of 33 operational units, in 14 countries, were assessed considering numerical and qualitative attributes to measure the relative importance of the selected parameters (weighting factors). The classification criteria were set according to location, such as: Globally Significant Areas, Protected Areas, Priority Conservation Areas, Threatened Species and Endemism, and Socio-Biodiversity. As a result, ten operational units were classified as low risk to biodiversity, 14 units revealed a medium risk and nine were classified as high risk. Classification of global risk by operational units.



14. Functions and processes performed by ecosystems and their species that enable the maintenance of living conditions on the planet, including the provision of resources (food, water, wood and fiber), support services (soil formation, photosynthesis and nutrient cycling) and regulating services (associated with the weather, flood control, control of infectious diseases and pests and maintaining water and air quality).

15. Available at: http://cebds.org/wp-content/uploads/2014/09/Pagamento-por-Servicos-Ambientais_RGB_Versao-FINAL1.pdf.



Vale classified
its operations
according to
biodiversity risks

33
operational
units were
evaluated...



...in 14 countries



João Marcos Rosa/Nitro

1,500 km²

corresponds to the
dimension of operational
areas of Vale, 39% relating
to industrial plantations



João Marcos Rosa/Nitro

Direct and indirect impacts

Examples of direct impacts are the loss of species (removal of flora and accidental death of fauna specimens) and the fragmentation and loss of habitats. While indirect (secondary) effects include the scare off of species and alterations in the composition of populations and communities (fauna and flora). There may also cause alterations in the functioning of ecosystems as a result, for example, of intervention to water bodies related to digging or the construction of tailing dams.

The Company's operational areas correspond to 1.5 thousand km² of land, 61% of which are dedicated to the extraction of minerals, industrial production, refining, processing and transport of products, and 39% relating to industrial plantations. Compared to 2014, there was a reduction of 1.1 thousand km² due to the divestment of Vale Integra's assets, in Australia, as well as a change in calculating the industrial plantation areas. In previous reports the total area of the properties dedicated to forestry production was classified as "interfered area". In this report, only productive plantation areas were considered, excluding preservation areas, such as legal reserves and Permanent Preservation Areas.

Taking all the location compared to protected area or to high incidence area to biodiversity (wilderness areas and hotspots) located outside protected areas, the amount of operational areas are distributed as follow:¹⁷

- 1 - 1-14% or 214 km² in areas with a high incidence of biodiversity, outside protected areas
- 2 - 2-11% or 166 km² adjacent to areas with a high incidence of biodiversity
- 3 - 3-30% or 463 km² close to legally protected areas
- 4 - 12% or 187 km² in areas legally protected (conservation units) [G4-EN11](#)

At the local level, the main risks, direct and indirect impacts associated with the company's operations – mainly the process of suppressing vegetation which may be necessary during the installation phases of the businesses or in the development of operational activities – are associated with changes in components of the physical environment that support the biotic environment (flora and fauna), and can cause changes in biodiversity and ecosystem services. [G4-EN12](#)

In 2015, 1,110 plant species and 1,533 animal species were identified in the company's operational areas, of which approximately 1.4% are on the Red List of the International Union for the Conservation of Nature (IUCN), and 0.7% are on the Brazilian Ministry for the Environment's official national list of endangered species. [G4-EN12](#) | [G4-EN14](#)

¹⁶. Large geographic areas considered important for the conservation of world's flora and fauna.

¹⁷. To calculate the adjacent area was considered a buffer of 10 km, generated from the outer limits of the protected area and high biodiversity value (adjacent), and was evaluated overlapping in relation to the area of the operation. The territories related to indigenous lands were not considered in the analysis.

The operational units develop Biodiversity Management Plans are drawn up for every stage of life-cycle of the businesses of the company. These include actions for prevention, control, mitigation and compensation of the company's activities related impacts, composed with actions that are obligatory and voluntary. The Biodiversity Management Plans are required for 43% of total number of operations, of which at the end of 2015, 95% have already been implemented, and the others are at a stage of defining details and scope. Additionally, Vale has a number of voluntary initiatives in place for biodiversity conservation, highlighting the maintenance of protected areas. **MM2**

Protected natural areas

Among the company's conservation initiatives is the maintenance of protected areas that contributes to promoting environmental balance, the preservation of natural resources and ecosystem services. Both particular areas (4.2%) as through partnerships (95.8%) Vale protects a total of 8.2 thousand km² of natural areas which represents almost 5.3 times of the total sum of operational units area. Disregarding its industrial plantation land, this area is 8.7 times bigger. 92.8% of these protected areas are located in regions classified as wilderness areas and 7.2% as hotspots, and 94% of these natural areas are close to operational units.

In comparison to 2014, the total area under protection is 46% less due to the discontinuation of a number of partnerships with other institutions. On the other hand, areas protected by the company's initiative have increased by 12% with the creation of new Private Natural Heritage Reserves (RPPN in Portuguese), totaling 32 owned by the company in the Iron Quadrangle, being 19 already established and 13 being implemented.

Also, with a focus on conservation and the prevention of illegal deforestation in Amazonia, in 2015 Vale continued to run the Fundo Vale's activities, a Civil Society Organization for Public Interest (Oscip in Portuguese), which acts in partnership with socio-environmental institutions, government and local communities. In 2015, Fundo Vale consolidated the achieved results by strengthening environmental governance with Amazonian municipalities, regional planning, strategic monitoring of illegal deforestation in the area and strengthening sociobiodiversity and the product value chains to value the standing forest, which contributes to the protection and/or the sustainable development of natural areas in conservation sites, settlements and indigenous lands, a total of 279 thousand km² distributed across the states of Acre, Amapá, Amazonas, Mato Grosso, Pará, Rondônia and Maranhão. **G4-EN13**



For more information, please visit
www.fundovale.org

Recovery of degraded areas

The land recovery process runs in parallel with operational activities and its quality and efficiency is monitored using indicators and a methodology that measure the effectiveness of the activities carried out over time. In addition to this, the mine closure involves verification of the end-results by independent external professionals.

In partnership with teaching and research institutes, Vale also carries out Research and Development projects (R&D) aimed at reducing costs, selection of native vegetation species for use in environmental reclamation, improvement of techniques as well as the development of result oriented quality indicators. The aim is also to gain greater knowledge of the ecology of native species and incentivate its embracing to leave a positive legacy for scientific communities.

Areas impacted and undergoing recovery* (in km²) **G4-EN13**

Status	2013	2014	2015
Impacted	18.4	35.8	15.6
Recovered (total)	17.8	24.4	9.7
Permanent	10.8	16.5	7.0
Temporary	7.1	7.9	2.7

*Includes all Vale's assets.

Opening and closing balances* **MM1**

Year	Impacted areas (opening balance)	Impacted areas in reference year	Permanent reclamation in reference year	Impacted areas (closing balance)
2013	596.5	11.0	8.1	599.4
2014	599.4	28.4	15.5	612.3
2015	612.3	15.1	6.6	620.8

*Only considers mineral extraction and production activities.

Caves

Vale's speleology (study of caves) department has been developing projects and research on caves, both in the mining areas, as well as environmental preservation. These studies add to scientific knowledge in this area and help to achieve favourable results for mining in the caves' area of influence. Speleology studies in the adjacent caves are also taken in consideration in new mines in the phase of environmental licensing.

An example of this specialized research is the Bio-speleology Program which involves an innovative initiative on the biotelemetry of bats, molecular analysis by infrared and DNA extraction to clarify questions on taxonomy. This program was also conducted with the implementation of remote monitoring of environmental indicators and vibration in the caves, as well as the development of a robot capable of inspecting caves at risk of collapse, significantly increasing operational safety.

Operational research is constantly being carried out to evaluate the interference of mining activities with the physical and biological characteristics of caves in iron deposit layers. Priority was given to significant environmental variables that can add to the understanding of the cave formation process and its ecology, as well as the maintenance of their physical integrity and ecologic functionality. In 2015,

the company successfully applied remote data transmission technology, ensuring greater security and precision of physical and environmental monitoring routines in the obtaining of seismographic data, measurement of geotechnical deformations, moisture and temperature. Currently, there are more than ten caves equipped with instruments and a further 3 thousand registered – constituting important information for the physical modeling studies. The principal results achieved reinforce Vale's commitment to evaluating and developing initiatives in alignment to the main concerns raised by the company's stakeholders.

In 2015, 15 caves were reclassified in areas close to mining activities, permitting economic use of the reserves. Research projects focusing on biology and the cave formation process, principally, have contributed to subsidize researches of caves of significance¹⁸ in the areas of operation and that holds a high potential for reclassification of its relevance level.

Cangas and rocky outcrops

Canga is a type of rock, originally found and described in Brazil, but occurring in many tropical and sub-tropical regions of the world, a product of the weathering of rocks rich in iron. Having hard surface, it is more resistant and therefore tends to sustain its profile. This same characteristic favours surface water run-off,

with the presence of seasonal waterfalls being common, it being difficult for vegetation to establish itself. For this reason, the predominant vegetation in these canga regions consists of rocky outcrops – ecosystems rich in biodiversity and still relatively unstudied.

The recovery programs for areas impacted by mining activity in these environments require more consistent information to achieve good results. Aware of the importance of this issue, the company has developed several projects for the recovery of these environments in its operational areas, while also supporting research projects with Brazilian universities, some of these being through the Vale Technological Institute (ITV in Portuguese).

8.2 thousand km²
of natural area protected
by the company

¹⁸. Caves with unique or rare genesis, unique morphology, remarkable dimensions in length, area or volume or unique speleothems.

600,000

seedlings of native flora
are in development in the
company's bio-plant



João Marcos Rosa/Nitro

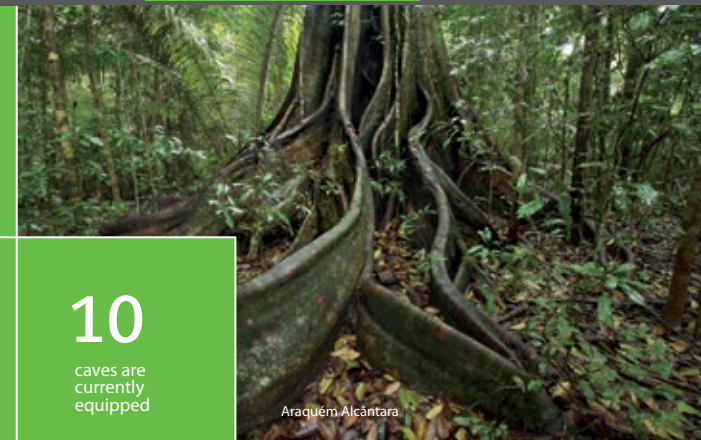
Data
transmission
technology
is used to
environmental
monitoring
routines

15

caves were
reclassified in
the year

10

caves are
currently
equipped



Araquém Alcântara

In 2015, Vale implemented its first bio-plant, exclusively focused on preservation of plant biodiversity, which uses biotechnology to obtain seedlings of species of native flora on a large scale, at a significantly reduced cost, especially those that are rare and in danger of extinction, and have difficulty in propagating by traditional means. In this environment, ideal conditions are re-created of nutrition, temperature and lighting to ensure the development of the species. Since the start of operations, in March 2015, 600 thousand seedlings have been produced, of 63 different species. The bio-plant is initially focused on the reproduction of orchids, bromeliads, cacti, native grasses and trees from the region where the company operates, in the Iron Quadrangle, where there is heavy presence of rocky outcrops and forests in the transition from the Atlantic Forest to the Brazilian Cerrado.

In partnership with the Vale Technology Institute (ITV in Portuguese), a project for the identification of native grasses is under way, which involves the study of phenological characteristics and identification of possible species with the potential to multiply and to be used for the

restoration of degraded environments. In parallel to this, a practical guide is being developed for the identification of the main plants occurring in the iron ore mining areas of the Environmental Protection Area in the Metropolitan Region of Belo Horizonte (APA-Sul Rm BH in Portuguese).

Another project essential to broadening knowledge and preservation of species of interest for conservation is being developed in Vale's Conservation Units – Private Natural Heritage Reserves (RPPN in Portuguese). This project aims to locate populations of rare, endemic and endangered species, to compile knowledge on their biology, distribution and ecology, and enable material to be collected which can be propagated, with a focus on conservation and restoration programs in the areas mined.

In the operational areas, after acquiring environmental licenses required for the project implementation, the prior rescuing of plants is carried out in areas where the removal of vegetation has been authorized, to be subsequently cultivated in nurseries and planted in areas that have been

mined and are being recovered. The top soil is removed where possible, carried and scattered in the areas being restored, where the rescued seedlings are introduced. After a year, the plants are already developing, with pioneer species growing from seeds contained in the top soil, forming a vegetation coverage that is similar to the area subjected to intervention. From here onwards, seedlings of species of interest for conservation, generally acclimatized and sought after for use in RPPN, are introduced to enrich the restored flora.

Since 2007, Vale invests in canga ecology studies in order to increase the biological knowledge of the species that inhabit this ecosystem, and from this, apply the results to projects for the preservation, conservation and restoration of these environments. Besides using its own results in its activities, the company is making a contribution to the scientific community, sharing the knowledge obtained from this work.

Independent Assurance Statement – Bureau Veritas



To Vale's stakeholders

INTRODUCTION

Bureau Veritas Certification Brazil (Bureau Veritas) was engaged by Vale S.A. (Vale), to conduct an independent assurance of its Sustainability Report for the year 2015 (hereinafter referred to as the Report).

This assessment was conducted by a multidisciplinary staff with expertise in non-financial data.

SCOPE OF WORK

The scope of this assurance encompassed the Guidelines and Principles¹ of the Global Reporting Initiative™ GRI G4 (2013) for Sustainability Reports, including the GRI Mining and Metal Sector Disclosure (2013), covering the calendar year of 2015.

VALE'S AND BUREAU VERITAS RESPONSIBILITIES

The collection, calculation and presentation of the data published in the report are Vale's management sole responsibility. Bureau Veritas is responsible for providing an independent opinion to the Stakeholders, pursuant to the scope of work defined in this statement.

METHODOLOGY

The Assurance covered the following activities:

1. Interviews with the personnel responsible for material issues and Report content;
2. Analysis of documentary evidence provided by Vale in relation to the reporting period (2015);
3. Verification of performance data relating to the principles that ensure the quality of the information, pursuant to the GRI-G4 Guideline and the Mining and Metal Sector Disclosure;
4. Review of Vale's internal systems for data aggregation;
5. Visits to the following sites: Global Head Office (Rio de Janeiro/RJ); Railway Carajás and Porto Ponta da Madeira (state of Maranhão); Minas Centrais complex – Águas Limpa and Brucutu operations (state of Minas Gerais); Vale Fertilizantes – Cubatão and Tapira complex (states of São Paulo and Minas Gerais); Salobo and Sossego Copper complex (state of Pará);
6. Desk review of Vale's stakeholder engagement activities.

The level of verification adopted was Limited, according to the requirements of the ISAE 3000 Standard², which were incorporated to the internal assessment protocols of Bureau Veritas.

LIMITATIONS AND EXCLUSIONS

Excluded from the scope of this work was any assessment of information related to:

- Activities outside the defined reporting period;
- Statements of position (expressions of opinion, beliefs, goals, or future intentions) on the part of Vale;
- Economic and financial information contained in this Report which has been taken from financial statements verified by independent financial auditors;
- Inventory of Greenhouse Gas (GHG) emissions in its entirety;
- Data and information concerning operations and activities that are not in the scope of the Report.

1. ISAE 3000: International Standard on Assurance Engagements and the GRI G4 guidelines
2. Materiality, Stakeholder Inclusiveness, Sustainability Context, Completeness, Balance, Comparability, Accuracy, Periodicity, Clarity, and Reliability.

TECHNICAL REPORT

- Vale elaborated the Report pursuant to Guideline GRI-G4, embracing its Principles and including the Sector Supplement;
- Regarding the Report boundary, we verified that no changes occurred compared to the previous publication. Vale presents data and information referring to the companies of the group in which it has an interest of more than 50%;
- Vale made progress in the Materiality assessment in 2015, by embracing the GRI-G4 methodology. Internal representatives of key-areas, directors and external experts were interviewed. The validation, in which the Director-President also took part, resulted in 12 material issues;
- The data presented to meet the GRI indicators EN3, EN4, EN16, EN17 and EN19 are part of the inventory of Greenhouse Gases Emissions (GGE), which was compiled based on the Brazilian Standard (NBR) ISO 14.064-1/07 and in the Brazilian Program – GHG Protocol. This inventory was certified in 2016 (base year 2015) by Bureau Veritas through a separate independent assurance process. We verified that the presentation of data concerning the emissions inventory was based on the GRI-G4 methodology;
- We evidenced progress in the control and management system for the water consumption, reuse and recirculation in some units visited. Nevertheless, we verified that in general an estimate base is still used to calculate this data;
- Vale made progress in its system of data and information collection in the operational units, by implementing a data collecting system. During our field visits we identified some divergence in the interpretation of the data requested, which resulted in varying quality and basis of data reporting;
- In the course of our Assurance the inconsistencies found in the Report regarding one or more principles of the GRI-G4 and the sector supplement were satisfactorily corrected, except for the data and information related to formal aspects of dam structures used in mining areas, which, in our opinion, should be presented in a more clear and objective manner;

- Vale published data or justified the absence of data regarding the indicators associated to material aspects of the GRI-G4 and the sector supplement.

RECOMMENDATIONS

- Continue the implementation of the water consumption, reuse and recirculation control and management systems. Linked with it, efforts shall be made towards unification of the concepts of water reuse and recirculation;
- Continue with the process of analysis and prioritization of Materiality, once this makes a better balance in the definition of the material issues possible;
- Strengthen the qualification in the operational units regarding the understanding of the data and information required through the newly implemented data collection software;
- Present clear and objective data and information regarding formal aspects of dam structures used in mining and other processes.

CONCLUSION

As a result of our assurance nothing has come to our attention that would indicate that:

- The information presented in the Report is not balanced, consistent and reliable;
- Vale has not established appropriate systems for the collection, aggregation and analysis of quantitative and qualitative data used in the Report;
- The Report does not adhere to the Principles for defining report content and quality of the GRI-G4 Guideline.

DECLARATION OF INDEPENDENCE AND IMPARTIALITY

Bureau Veritas Certification is an independent professional services firm specializing in Quality, Health, Safety, Social and Environmental Management, with more than 185 years' experience in independent assessment.

Bureau Veritas has a quality management system that is certified by a third party, according to which policies and documented procedures are maintained for the compliance with ethic, professional and legal requirements.

The assessment team has no links with Vale and the assessment is performed independently.

Bureau Veritas implemented and follows a Code of Ethics throughout its business, in order to assure that its staff preserve high ethical, integrity, objectivity, confidentiality and competence/professional attitude standards in the performance of their activities. At the end of the assessment, a detailed report was drawn up, ensuring traceability of the process. This Report is kept as a Bureau Veritas management system record.

CONTACT

Bureau Veritas Certification is available for further clarification on www.bureauveritascertification.com.br/faleconosco.asp or by telephone (55 11) 2655-9000



São Paulo, Brazil, May 2016.

Alexander Vervuurt

Lead Auditor; Assurance Sustainability Reports (ASR)
Bureau Veritas Certification – Brazil

GRI G4 Summary



Materiality
Disclosures
Vale S.A.



Profile				
Strategy and analysis			Global Compact	SDG* Pages RS
G4-1	Core	Statement from the Chairman.	-	- 10 and 11
G4-2	Comprehensive	Key impacts, risks, and opportunities.	-	- 2, 32, 41, 54, 71
Organizational profile			Global Compact	SDG Pages RS
G4-3	Core	Name of the organization.	-	- 13
G4-4	Core	Primary products, brands and services.	-	- 13
G4-5	Core	Location of the organization's headquarters.	-	- 13
G4-6	Core	Countries where the organization has significant operations or that are specifically relevant to the sustainability topics covered in the report.	-	- 13
G4-7	Core	Nature of ownership and legal form.	-	- 13
G4-8	Core	Markets served (including geographic breakdown, sectors served, and types of customers and beneficiaries).	-	- 13
G4-9	Core	Scale of the reporting organization.	-	- 36 and 37
G4-10	Core	Workforce characteristic.	6	8 13 and 43
G4-11	Core	Percentage of total employees covered by collective bargaining agreements.	3	8 46
G4-12	Core	Description of the organization's supply chain.	-	- 53
G4-13	Core	Significant changes regarding the organization's size, structure, ownership, and its supply chain.	-	- 2
G4-14	Core	Description about whether and how the precautionary approach or principle is addressed by the organization.	-	- 32
G4-15	Core	Externally developed charters, principles, or other initiatives.	-	- 17 and 27
G4-16	Core	Participation in associations and national or international organizations.	-	- 27

*Sustainable Development Goals (SDG).

Identified material aspects and boundaries			Global Compact	SDG	Pages RS
G4-17	Core	Entities included in the organization's consolidated financial statements and entities not covered by the report.	-	-	13
G4-18	Core	Process for defining the report content.	-	-	2 and 24
G4-19	Core	Material aspects identified in the process for defining report content.	-	-	2
G4-20	Core	Material aspects within the organization.	-	-	2
G4-21	Core	Material aspects outside the organization.	-	-	2
G4-22	Core	Restatements of information provided in earlier reports.	-	-	3
G4-23	Core	Significant changes from previous reporting periods in scope and aspect boundaries.	-	-	3
Stakeholder engagement			Global Compact	SDG	Pages RS
G4-24	Core	Stakeholder groups engaged by the organization.	-	-	24
G4-25	Core	Basis for identification and selection of stakeholders with whom to engage.	-	-	2 and 24
G4-26	Core	Approach and frequency of stakeholders engagement.	-	-	24
G4-27	Core	Key topics and concerns that have been raised through stakeholder engagement, by stakeholder groups.	-	-	2 and 3
Report profile			Global Compact	SDG	Pages RS
G4-28	Core	Reporting period.	-	-	2
G4-29	Core	Date of most recent previous report (if any).	-	-	2
G4-30	Core	Reporting cycle (annual, biennial).	-	-	2
G4-31	Core	Contact for questions regarding the report or its contents.	-	-	2
G4-32	Core	'In accordance' option the organization has chosen.	-	-	2
G4-33	Core	Policy and current practice with regard to seeking external assurance for the report.	-	-	2

Governance			Global Compact	SDG	Pages RS
G4-34	Core	Governance structure of the organization, including committees of the highest governance body.	-	-	17
G4-35	Comprehensive	Process for delegating economic, environmental and social topics from the highest governance body.	-	-	17
G4-36	Comprehensive	Executive-level positions with responsibility for economic, environmental and social topics.	-	-	18
G4-37	Comprehensive	Processes for consultation between stakeholders and the highest governance body on economic, environmental and social topics.	-	16	18
G4-38	Comprehensive	Profile of highest governance bodies and its committees.	-	5 and 16	18
G4-39	Comprehensive	Report whether the Chair of the highest governance body is also an executive officer (and, if so, his or her function within the organization's management and the reasons for this arrangement).	-	16	18
G4-40	Comprehensive	Nomination and selection processes for the highest governance body and its committees.	-	5 and 16	18
G4-41	Comprehensive	Processes for the highest governance body to ensure conflicts of interest are avoided and managed.	-	16	19
G4-42	Comprehensive	The highest governance body's and senior executives' roles in the development, approval, and updating of the organization's purpose, value or mission statements, strategies, policies, and goals.	-	-	18
G4-43	Comprehensive	Measures taken to develop and enhance the highest governance body's collective knowledge of economic, environmental and social topics.	-	4	19
G4-44	Comprehensive	Processes for evaluation of the highest governance body's performance with respect to economic, environmental and social topics.	-	-	18
G4-45	Comprehensive	The highest governance body's role in the identification and management of economic, environmental and social impacts, risks, and opportunities, and in the implementation of due diligence processes.	-	16	18
G4-46	Comprehensive	The highest governance body's role in reviewing the effectiveness of the organization's risk management processes for economic, environmental and social topics.	-	-	18
G4-47	Comprehensive	Frequency of the highest governance body's review of economic, environmental and social impacts, risks, and opportunities.	-	-	18
G4-48	Comprehensive	The highest committee or position that formally reviews and approves the organization's sustainability report and ensures that all material aspects are covered.	-	-	19
G4-49	Comprehensive	Process for communicating critical concerns to the highest governance body.	-	-	19

G4-50	Comprehensive	Nature and total number of critical concerns that were communicated to the highest governance body and the mechanism(s) used to address and resolve them.	-	-	21 and 32
G4-51	Comprehensive	Remuneration policies for the highest governance body and senior executives.	-	-	18 – Please, check out the information in the session "Management Compensation" of 20-F Report, available at www.vale.com .
G4-52	Comprehensive	Process for determining remuneration.	-	-	45
G4-53	Comprehensive	How stakeholders' views are sought and taken into account regarding remuneration.	-	16	18
G4-54	Comprehensive	Ratio of the annual total compensation for the organization's highest-paid individual in each country of significant operations to the median annual total compensation for all employees (excluding the highest-paid individual) in the same country.	-	-	Information subject to specific confidentiality restrictions: Vale does not disclose the amounts of paid salaries.
G4-55	Comprehensive	Ratio of percentage increase in annual total compensation for the organization's highest-paid individual in each country of significant operations to the median percentage increase in annual total compensation for all employees (excluding the highest-paid individual) in the same country.	-	-	Information subject to specific confidentiality restrictions: Vale does not disclose the amounts of paid salaries.
Ethics and integrity			Global Compact	SDG	Pages RS
G4-56	Core	Organization's values, principles, standards and norms of behavior such as codes of conduct and codes of ethics.	10	16	13 and 20
G4-57	Comprehensive	Internal and external mechanisms for seeking advice on ethical and lawful behavior.	10	16	20
G4-58	Comprehensive	Internal and external mechanisms adopted by the organization for reporting concerns about unethical or unlawful behavior.	10	16	20

Category: Economic

Aspect: Economic performance		Global Compact	SDG	Pages RS
DMA		-	-	36
G4-EC1	Direct economic value generated and distributed.	-	2, 5, 7, 8 and 9	37
G4-EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change.	7	13	70 to 72
G4-EC3	Coverage of the organization's defined benefit plan obligations.	-	-	Indicator not applicable according to the materiality.
G4-EC4	Financial assistance received from government.	-	-	Please, check out the information in the session Tax Incentives of 20-F Report, available at www.vale.com .
Aspect: Market presence		Global Compact	SDG	Pages RS
DMA		-	-	45 , 53 and 57
G4-EC5	Ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation.	6	1, 5 and 8	45 – Information subject to specific confidentiality restrictions: Vale does not disclose the amounts of paid salaries.
G4-EC6	Proportion of senior management hired from the local community at significant locations of operation.	6	8	57
Aspect: Indirect economic impacts		Global Compact	SDG	Pages RS
DMA		-	-	54 to 57
G4-EC7	Development and impact of infrastructure investments and services supported.	-	2, 5, 7, 9 and 11	39 and 62
G4-EC8	Significant indirect economic impacts, including the extent of impacts.	-	1, 2, 3, 8, 10 and 17	54
Aspect: Procurement practices		Global Compact	SDG	Pages RS
DMA		-	1, 5 and 8	53
G4-EC9	Proportion of spending on local suppliers at significant locations of operation.	-	12	53

Category: Environmental

Aspect: Materials		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
G4-EN1	Materials used by weight or volume.	7 and 8	8 and 12	-
G4-EN2	Percentage of materials used that are recycled input materials.	8	8 and 12	-
Aspect: Energy		Global Compact	SDG	Pages RS
DMA		-	-	67 and 68
G4-EN3	Energy consumption within the organization.	7 and 8	7, 8, 12 and 13	67
G4-EN4	Energy consumption outside of the organization.	8	7, 8, 12 and 13	The information is not available The report is estimated for 2018, when the actions of the developed action plan will be completed.
G4-EN5	Energy intensity.	8	7, 8, 12 and 13	68
G4-EN6	Reduction of energy consumption.	8 and 9	7, 8, 12 and 13	28 and 69
G4-EN7	Reductions in energy requirements of products and services.	8 and 9	7, 8, 12 and 13	Indicator not applicable according to the materiality.
Aspect: Water		Global Compact	SDG	Pages RS
DMA		-	-	74 and 75
G4-EN8	Total water withdrawal by source.	7 and 8	6	75
G4-EN9	Water sources significantly affected by withdrawal of water.	8	6	The information is unavailable. There is to plan to the implementation of the collection by 2018.
G4-EN10	Percentage and total volume of water recycled and reused.	8	6, 8 and 12	75
Aspect: Biodiversity		Global Compact	SDG	Pages RS
DMA		-	-	85 and 86
G4-EN11	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.	8	6, 14 and 15	86
G4-EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.	8	6, 14 and 15	86
G4-EN13	Habitats protected or restored.	8	6, 14 and 15	87
G4-EN14	Total number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk.	8	6, 14 and 15	86

Aspect: Emissions		Global Compact	SDG	Pages RS
DMA		-	-	66
G4-EN15	Direct greenhouse gas (GHG) emissions (scope 1).	7 and 8	3, 12, 13, 14 and 15	66
G4-EN16	Energy indirect greenhouse gas (GHG) emissions (scope 2).	7 and 8	3, 12, 13, 14 and 15	66
G4-EN17	Other indirect greenhouse gas (GHG) emissions (scope 3).	7 and 8	3, 12, 13, 14 and 15	71
G4-EN18	Greenhouse gas (GHG) emissions intensity.	8 and 9	13, 14 and 15	67
G4-EN19	Reduction of greenhouse gas (GHG) emissions.	8	13, 14 and 15	67 and 68
G4-EN20	Emissions of ozone-depleting substances (ODS).	7 and 8	3 and 12	Indicator not applicable according to the materiality.
G4-EN21	NOx, SOx, and other significant air emissions.	7 and 8	13, 14 and 15	73 and 74
Aspect: Effluents and waste		Global Compact	SDG	Pages RS
DMA		-	-	74 and 77
G4-EN22	Total water discharge by quality and destination.	8	3, 6, 12 and 14	75
G4-EN23	Total weight of waste by type and disposal method.	8	3, 6 and 12	77 and 78
G4-EN24	Total number and volume of significant spills.	8	3, 6, 12, 14 and 15	79
G4-EN25	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention annex I, II, III, and VIII, and percentage of transported waste shipped internationally.	8	3 and 12	78
G4-EN26	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the organization's discharges of water and runoff.	8	6 and 15	Indicator not applicable according to the materiality.
Aspect: Products and services		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
G4-EN27	Extent of impact mitigation of environmental impacts of products and services.	7-9	6, 8, 12, 13, 14 and 15	-
G4-EN28	Percentage of products sold and their packaging materials that are reclaimed by category.	8 and 9	8 and 12	-
Aspect: Compliance		Global Compact	SDG	Pages RS
DMA		-	-	33
G4-EN29	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.	8	15	33

Aspect: Transport		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
G4-EN30	Significant environmental impacts of transporting products and other goods and materials for the organization's operations, and transporting members of the workforce.	8	11, 12 and 13	-
Aspect: Overall		Global Compact	SDG	Pages RS
DMA		-	-	39
G4-EN31	Total environmental protection expenditures and investments by type.	7-9	7, 9, 12, 13, 14, 15 and 17	39
Aspect: Supplier environmental assessment		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
G4-EN32	Percentage of new suppliers that were screened using environmental criteria.	8	-	-
G4-EN33	Significant actual and potential negative environmental impacts in the supply chain and actions taken.	8	-	-
Aspect: Environmental grievance mechanisms		Global Compact	SDG	Pages RS
DMA		-	-	21
G4-EN34	Number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanisms.	8	16	21
Category: Labor practices and decent work				
Aspect: Employment		Global Compact	SDG	Pages RS
DMA		-	-	43 to 45
G4-LA1	Total number and rates of new employee hires and employee turnover by age group, gender and region.	6	5 and 8	44
G4-LA2	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation.	-	8	45
G4-LA3	Return to work and retention rates after parental leave, by gender.	6	5 and 8	45
Aspect: Labor/management relations		Global Compact	SDG	Pages RS
DMA		-	-	46
G4-LA4	Minimum notice periods regarding operational changes, including whether these are specified in collective agreements.	3	8	46

Aspect: Occupational health and safety		Global Compact	SDG	Pages RS
DMA		-	-	50
G4-LA5	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs.	-	8	53
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender.	-	3 and 8	51 to 53
G4-LA7	Workers with high incidence or high risk of diseases related to their occupation.	-	3 and 8	53
G4-LA8	Health and safety topics covered in formal agreements with trade unions.	-	8	46
Aspect: Training and education		Global Compact	SDG	Pages RS
DMA		-	-	46
G4-LA9	Average hours of training per year per employee by gender, and by employee category.	6	4, 5 and 8	48
G4-LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.	-	8	Indicator not applicable according to the materiality.
G4-LA11	Percentage of employees receiving regular performance and career development reviews, by gender and by employee category.	6	5 and 8	46
Aspect: Diversity and equal opportunity		Global Compact	SDG	Pages RS
DMA		-	-	49
G4-LA12	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity.	6	5 and 8	49
Aspect: Equal remuneration for women and men		Global Compact	SDG	Pages RS
DMA		-	-	49
G4-LA13	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation.	6	5, 8 and 10	49
Aspect: Supplier assessment for labor practices		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
G4-LA14	Percentage of new suppliers that were screened using labor practices criteria.	-	5, 8 and 16	-
G4-LA15	Significant actual and potential negative impacts for labor practices in the supply chain and actions taken.	-	5, 8 and 16	-

Aspect: Labor practices grievance mechanisms		Global Compact	SDG	Pages RS
DMA		-	-	21
G4-LA16	Number of grievances about labor practices filed, addressed, and resolved through formal grievance mechanisms.	-	16	21
Category: Human rights				
Aspect: Investment		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
G4-HR1	Total number and percentage of significant investment agreements and contracts that include human rights clauses or that underwent human rights screening.	2	-	-
G4-HR2	Total hours of employee training on human rights policies or procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained.	1	-	-
Aspect: Non-discrimination		Global Compact	SDG	Pages RS
DMA		1 to 6	-	21
G4-HR3	Total number of incidents of discrimination and corrective actions taken.	6	5, 8 and 16	21
Aspect: Freedom of association and collective bargaining		Global Compact	SDG	Pages RS
DMA		-	-	46
G4-HR4	Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and measures taken to support these rights.	3	8	46
Aspect: Child labor		Global Compact	SDG	Pages RS
DMA		-	-	22
G4-HR5	Operations and suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor.	5	8 and 16	23
Aspect: Forced or compulsory labor		Global Compact	SDG	Pages RS
DMA		-	-	22
G4-HR6	Operations and suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor.	4	8	23

Aspect: Security practices		Global Compact	SDG	Pages RS
DMA		1	-	Aspect not applicable according to the materiality.
G4-HR7	Percentage of security personnel trained in the organization's human rights policies or procedures that are relevant to operations.	1	16	-
Aspect: Indigenous rights		Global Compact	SDG	Pages RS
DMA		1	-	57
G4-HR8	Total number of incidents of violations involving rights of indigenous peoples and actions taken.	1	2	58
Aspect: Assessment		Global Compact	SDG	Pages RS
DMA		1	-	Aspect not applicable according to the materiality.
G4-HR9	Total number and percentage of operations that have been subject to human rights reviews or impact assessments.	1	-	-
Aspect: Supplier human rights assessment		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
G4-HR10	Percentage of new suppliers that were screened using human rights criteria.	2	-	-
G4-HR11	Significant actual and potential negative human rights impacts in the supply chain and actions taken.	2	-	-
Aspect: Human rights grievance mechanisms		Global Compact	SDG	Pages RS
DMA		1	-	21
G4-HR12	Number of grievances about human rights impacts filed, addressed, and resolved through formal grievance mechanisms.	1	16	21
Category: Society				
Aspect: Local communities		Global Compact	SDG	Pages RS
DMA		1	-	54
G4-SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs.	1	-	55
G4-SO2	Operations with significant actual and potential negative impacts on local communities.	1	1 and 2	54

Aspect: Anti-corruption		Global Compact	SDG	Pages RS
DMA		-	-	20
G4-SO3	Total number and percentage of operations assessed for risks related to corruption and the significant risks identified.	10	16	20
G4-SO4	Communication and training on anti-corruption policies and procedures.	10	16	20
G4-SO5	Confirmed incidents of corruption and actions taken.	10	16	21
Aspect: Public policy		Global Compact	SDG	Pages RS
DMA		-	-	26
G4-SO6	Total value of political contributions by country and recipient/beneficiary.	10	16	26
Aspect: Anti-competitive behavior		Global Compact	SDG	Pages RS
DMA		-	-	34
G4-SO7	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes.	-	16	34
Aspect: Compliance		Global Compact	SDG	Pages RS
DMA		-	-	33
G4-SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.	-	16	33
Aspect: Supplier assessment for impacts on society		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
G4-SO9	Percentage of new suppliers that were screened using criteria for impacts on society.	-	-	-
G4-SO10	Significant actual and potential negative impacts on society in the supply chain and actions taken.	-	-	-
Aspect: Grievance mechanisms for impacts on society		Global Compact	SDG	Pages RS
DMA		-	-	21 and 57
G4-SO11	Number of grievances about impacts on society filed, addressed, and resolved through formal grievance mechanisms.	-	16	21 and 57

Category: Product responsibility

Aspect: Customer health and safety		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
G4-PR1	Percentage of significant product and service categories for which health and safety impacts are assessed for improvement.	-	-	-
G4-PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products and services during their life cycle, by type of outcomes.	-	15	-
Aspect: Product and service labeling		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
G4-PR3	Type of product and service information required by the organization's procedures for product and service information and labeling, and percentage of significant product and service categories subject to such information requirements.	-	12	-
G4-PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes.	-	16	-
G4-PR5	Results of surveys measuring customer satisfaction.	-	-	-
Aspect: Marketing communication		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
G4-PR6	Sale of banned or disputed products.	-	-	-
G4-PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship, by type of outcomes.	-	16	-
Aspect: Customer privacy		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
G4-PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.	-	16	-
Aspect: Compliance		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
G4-PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services.	-	16	-

Environmental section

Aspect: Biodiversity		Global Compact	SDG	Pages RS
DMA		-	-	85
MM1	Amount of land (owned or leased, and managed for production activities or extractive use) disturbed or rehabilitated.	-	3, 6, 12 and 15	87
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.	-	6, 14 and 15	87
Aspects: Emissions, effluents and waste		Global Compact	SDG	Pages RS
DMA		-	-	74 and 77
MM3	Total amounts of overburden, rock, tailings, and sludges and their associated risks.	-	3, 6 and 12	78

Social section

Labor practices and decent work performance indicators

Aspect: Labor/Management Relations		Global Compact	SDG	Pages RS
DMA		-	-	46
MM4	Number of strikes and lock-outs exceeding one week's duration, by country.	-	8	46

Human rights performance indicators

Aspects: Indigenous Rights		Global Compact	SDG	Pages RS
DMA		-	-	58
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.	-	1 and 2	57

Society performance indicators

Aspect: Community		Global Compact	SDG	Pages RS
DMA		-	-	60
MM6	Number and description of significant disputes relating to land use, customary rights of local communities and Indigenous Peoples.	-	1 and 2	60
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.	-	1 and 2	60

Aspect: Artisanal and small-scale mining		Global Compact	SDG	Pages RS
DMA		-	-	Aspect not applicable according to the materiality.
MM8	Number (and percentage) of company operating sites where artisanal and small-scale mining (ASM) takes place on, or adjacent to, the site; the associated risks and the actions taken to manage and mitigate these risks.	-	1, 2, 3, 6, 8 and 12	-

Aspect: Resettlement		Global Compact	SDG	Pages RS
DMA		-	-	61
MM9	Sites where resettlements took place, the number of households resettled in each, and how their livelihoods were affected in the process.	-	1 and 2	61

Aspect: Closure planning		Global Compact	SDG	Pages RS
DMA		-	-	63
MM10	Number and percentage of operations with closure plans.	-	-	63

Product responsibility performance indicators

Aspect: Materials stewardship		Global Compact	SDG	Pages RS
DMA		-	7, 8, 9, 12, 13, 14 and 17	Aspect not applicable according to the materiality.

Production

General coordination

Environment

Editorial support

Communications and External Affairs

Technical support

EY

External verification

Bureau Veritas Brasil

Editorial coordination and graphic production

TheMediaGroup

Translation

Ashley Huggins and Fernanda Rocha

Photography

Vale Image Bank

Cover – Edneya Lima, Giuliano Rafael Alves, Ana Paula Bicalho Braga and Graciano Silva

We thank all employees who were directly or indirectly involved in the preparation of this report.