

BRAZILIAN MINT
SUSTAINABILITY REPORT 2016



CASA DA MOEDA DO BRASIL

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▶ FOREWORD

Transparency is a core value at the Mint.

This value is embodied in the series of publications we periodically issue to report on our management decisions, financial performance and engagement with the Brazilian government and society.

Through our first Sustainability Report, we are further enhancing transparency by compiling information on economic, social and environmental performance in fiscal 2015 and 2016 in a single publication. In it we summarize our most significant projects, process innovations and other achievements.

The present Report is a condensed version of the full Sustainability Report, which is available at www.casadamoeda.gov.br.

We hope you find our report interesting and informative.

STATEMENT FROM THE CHIEF EXECUTIVE



“A recent reorganization of the Mint has focused on simple solutions and quick wins to improve productivity and efficiency without raising costs.”

Casa da Moeda do Brasil (“the Mint”) has sought to consistently enhance its management transparency through disclosure of information about performance and production capacity. Our Sustainability Report for 2015/2016, the first in our history, is an important tool as part of these efforts. In two years of significant transformation, the period covered by this Report was punctuated by events that have been etched into our three centuries of history.

We also faced major challenges deriving from the internal and external business environment which required extra effort by all employees and by our management, which was newly appointed in July 2016. This Report summarizes our key achievements in 2015 and 2016 and how we are preparing for the future.

2016 saw the successful delivery of one of the most important projects in our history: the medals, commemorative coins and security print materials for the Rio 2016 Olympic and Paralympic Games. Much was learned from our collaboration with the Rio 2016 Organizing Committee. In addition to driving business opportunities and providing increased visibility,

the project accelerated progress in sustainability by developing materials using environmentally and socially responsible sourcing.

These lessons were incorporated into our environmental management processes, which were certified in 2015 to ISO 14001 (Environmental Management Systems) and OHSAS 18001 (Occupational Health and Safety Management Systems).

This was achieved in a context of major transformation. A reorganization of our departments and management in 2015 restructured the Mint’s core business and customer service processes. We will now assess the outcomes from the reorganization over the course of one year and whether any further adjustment will be required. With a focus on our human capital, we have enhanced our knowledge- and capacity-building processes and invested in a new people management committee. We have revised our Code of Ethics and developed a Compliance Policy designed to meet the Mint’s requirements and to improve project efficiencies without neglecting good governance and compliance with applicable laws and regulations.

2016 saw the delivery of one of the most important projects in our history: the medals, commemorative coins and security print materials for the Rio 2016 Olympic and Paralympic Games – in a collaboration from which much was learned.”

To “put things in order” during this period of transition, we are implementing a program called “Programa Óbvio” that is focused on finding simple solutions and ensuring existing processes function properly. Results from the program include our successful reestablishment of passport production with an increased focus on machine maintenance and cross-team communications; initial changes for compliance with the Government Companies Act, which came into force in July 2016; and the development of new applications for our digital product tracking and identification technology.

These and other “housekeeping” initiatives enabled us to meet our circulation currency production targets without delays during the year. With this focus on quick-win ideas, allowing us to increase productivity and efficiency without raising costs, we will continue to improve our services and develop new markets in Brazil and abroad.

The whole of these efforts is described in the following pages, which tell the story of both our past and our present and what we aspire for the future. Delivering on

two of our values – transparency and sustainability – this Report demonstrates our tireless efforts to fulfill our Mission of providing customers with sustainable security solutions in the currency, identification and fiscal control segments.

Alexandre Borges Cabral
Chief Executive,
Casa da Moeda do Brasil





ABOUT THE MINT

Casa da Moeda do Brasil (“the Mint”) has produced Brazil’s circulation currency for more than 300 years and today operates one of the world’s largest facilities in its segment. Our manufacturing site in Rio de Janeiro (RJ) comprises three plants with an annual production capacity of 3

billion banknotes and 4 billion coins in three work shifts from Monday to Friday, in addition to chip-embedded passports, revenue stamps, medals and a variety of security documents for the Brazilian and international markets.

Mission, Vision & Values



Mission

Provide customers with sustainable security solutions in the currency, identification and fiscal control segments.



Vision

To be recognized in the domestic and international market and by society for excellence, innovation and sustainability in security solutions across the currency, identification, fiscal control and numismatics segments.



Values

Ethics;
Transparency;
Commitment;
Results Orientation;
Quality;
Innovation; and
Sustainability.

► PROFILE

SINCE

1975

the Mint has been positioned to serve both local and global markets.

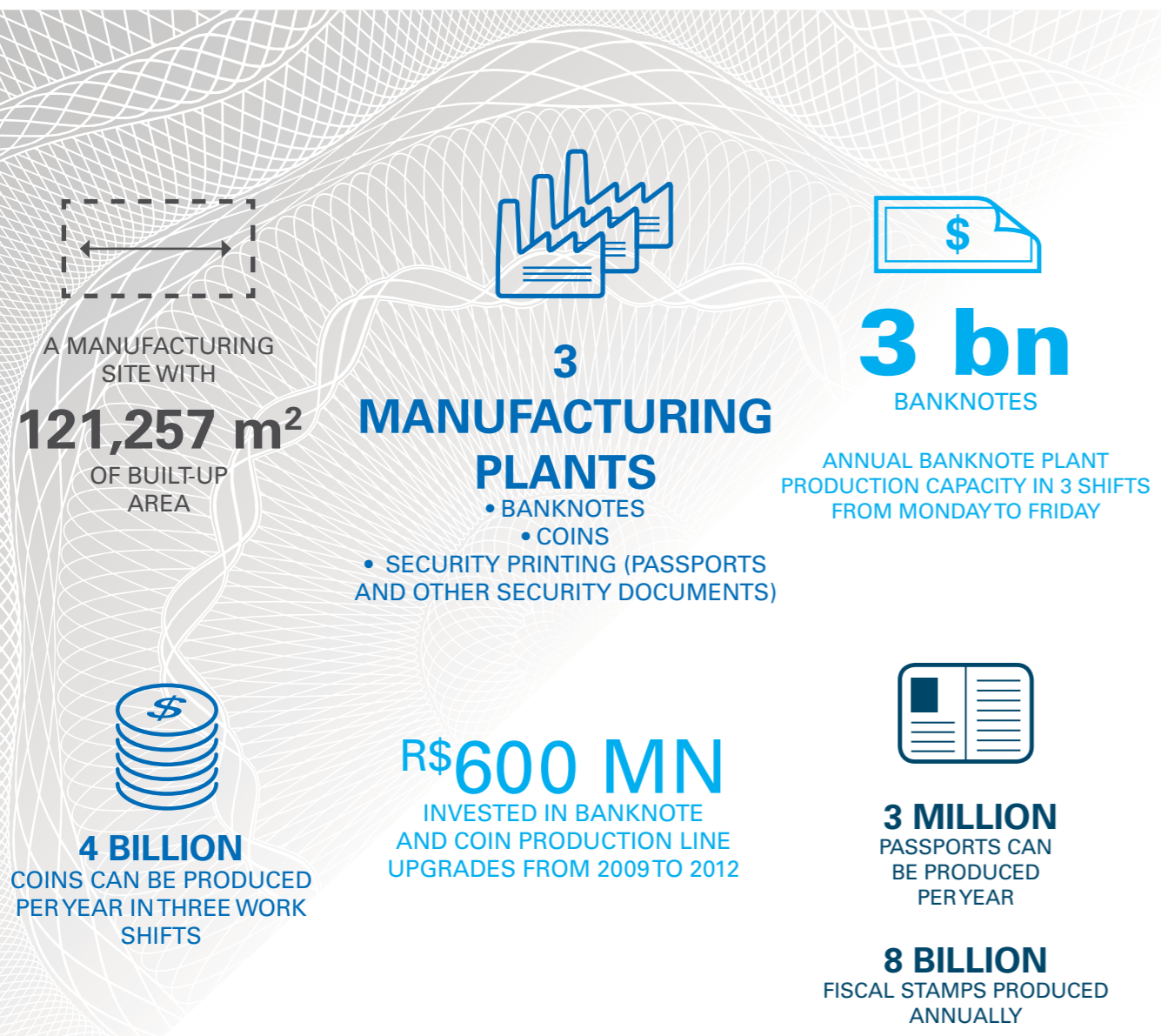
Casa da Moeda do Brasil is a wholly federal government-owned company operating under the auspices of the Ministry of Finance, with private-law legal personality and independent equity and management. It has an exclusive mandate for the production of Brazilian circulation coins and banknotes, federal stamps and fiscal stamps, federal government debt securities, booklets, passports and fiscal control activities under Act 11488/2007 and Act 10833/2003. The Mint is headquartered in Brasilia (DF) and has offices and manufacturing sites in Rio de Janeiro (RJ). Since 1975 the Mint has been positioned to serve both local and global markets. To date, we have supplied products and services to Angola, Argentina, Bolivia, Costa Rica, Ecuador, Guinea Bissau, Haiti, Paraguay, Peru, Suriname, Uruguay, Venezuela and Zaire.

► Timeline of the Brazilian Mint



THE MINT IN NUMBERS

Learn more about the Mint's production capabilities, facilities and product and service offering.



▶ PRODUCT PORTFOLIO

PRODUCTS	DESCRIPTION	CUSTOMERS
Banknotes (R\$ 2, R\$ 5, R\$ 10, R\$ 20, R\$ 50 and R\$ 100 denominations)	Brazilian banknotes have security features such as watermarks, magnetic security threads, latent images, obverse/reverse registration, tactile intaglio printing and hologram patches or stripes	Brazilian Central Bank
Circulation coins (R\$ 0.05, R\$ 0.10, R\$ 0.25, R\$ 0.50 and R\$ 1)	Made of bronze-plated steel (R\$ 0.10 and R\$ 0.25), copper-plated steel (R\$ 0.05) and stainless steel (R\$ 0.50). R\$ 1 coins are of stainless steel (core) and bronze-plated steel (ring)	
Commemorative coins and medals/badges and insignia	Numismatic and non-numismatic products for the domestic and foreign markets with special finishes and noble metals such as gold, silver and other alloys	Brazilian Central Bank, Rio 2016 Organizing Committee (read more on page 32), Federal Highway Police, Brazilian Federal Tax Authority, among other customers
Passports	Since 2005, the Mint has been tasked with personalizing Brazilian Passports, which contain security features such as UV-fluorescent security fibers, watermarks and security threads, as well as offset and intaglio printing. The Mint is also the exclusive manufacturer of chip-embedded passport booklets	Federal Police and Ministry of Foreign Affairs
Smart ID cards with digital certification	Our smart ID cards feature personalized biometric and biographic data in print (laser, retransfer and inkjet) and digital (chip-recorded variable data) form on PVC and polycarbonate substrates. In addition to producing the ID cards proper, in 2010 the Mint became a first-tier certification authority accredited to issue, renew, revoke and manage digital certificates (electronic documents used to guarantee the security and confidentiality of information flowing on the Internet)	Federal Council of Medicine (CFM) and National Aviation Agency (ANAC)
Tracking tax stamps	Cigarettes and spirits are required to bear tax stamps produced exclusively by the Mint. Cigarette stamps have unique tracking codes that are invisible to the naked eye	Brazilian Federal Tax Authority
Diploma and certificate base stock	The Mint produces diploma and certificate stock incorporating safety features such as special inks and papers, hologram patches and custom numbering	National Civil Aviation Agency (ANAC), State Environmental Institute (INEA) and public and private universities
Magnetic tickets	Magnetic tickets are produced using rotary printers, dry offset printing and inkjet printing. Magnetic stripes are printed using a special magnetic ink	Companhia Paulista de Trens Metropolitanos (CPTM) and Metrô São Paulo.
Postage stamps	The Mint is the exclusive manufacturer under law of Brazilian postal stamps. They are recognized by philatelists around the world for their cultural value and artistic taste	Empresa Brasileira de Correios e Telégrafos (ECT)
Professional and civil identity documents	Professional and civil identity documents are produced from collected biometric and biographic data using laser printing on security paper	Brazilian Intelligence Agency (ABIN), Osvaldo Cruz Foundation (FIOCRUZ), and the Federal Tax Authority

CORPORATE GOVERNANCE AND MANAGEMENT FRAMEWORK

The Mint's highest governance bodies are the Board of Directors and Executive Board. The Board of Directors is composed of five members: a chair (appointed by the Minister of Finance), the Chief Executive and three other members appointed respectively by the Minister of Planning, by the President of the Brazilian Central Bank and by Mint employees. Members serve a renewable term of three years. [GRI 64-34]

The Board of Directors' responsibilities include establishing and monitoring implementation of general business guidance;

overseeing the activities of the Executive Board; and deciding on multi annual plans, programs of activities and investment programs.

Composition of the Board of Directors (as of December 2016)

MEMBER	REPRESENTS
Julio Alexandre Menezes da Silva	Ministry of Finance
Alexandre Borges Cabral	Chief Executive
Vania Lucia Ribeiro Viana	Ministry of Planning
Luiz Edson Feltrim	Brazilian Central Bank
Paulo Saltoris de Matos	Mint Employees

The Executive Board is composed of five members (a president and five members), all appointed by the President of Brazil. The responsibilities of the Executive Board include developing the Mint's Internal Regulations, budgets, standards and guidelines for internal processes.

Executive Board (as of December 2016)

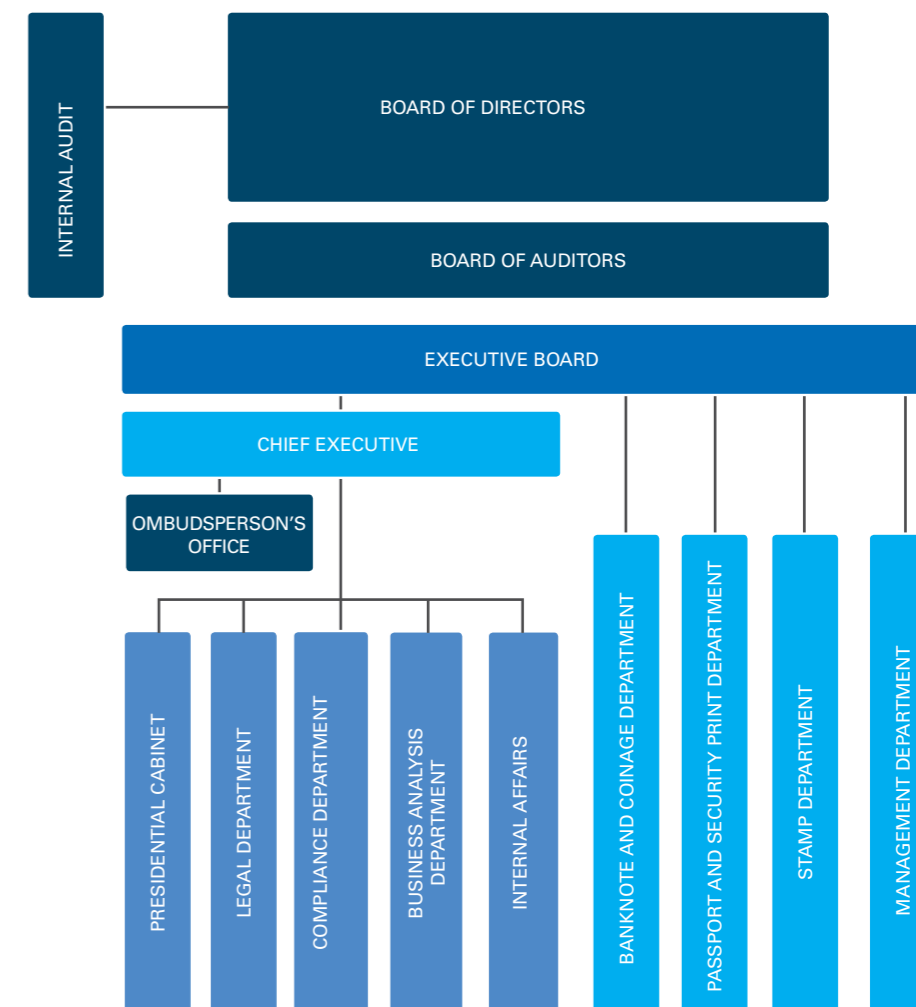
Alexandre Borges Cabral
Roberto Alfredo Paulo
Jehovah de Araújo Silva Junior
Lara Caracciolo Amorelli
Vagner de Souza Luciano

The Executive Board is under the oversight of the Board of Auditors, which is composed of three members and an equal number of substitutes appointed by the Minister of Finance. Two members represent the Minister of Finance and the third represents the Office of the National Treasury.

Board of auditors (as of December 2016)

MEMBER	REPRESENTS
Fábio Franco Barbosa Fernandes	Ministry of Finance
Mauro Iunes Okamoto	Office of the National Treasury
Edson Leonardo Dalescio Sá Teles	Ministry of Finance

ORGANIZATIONAL STRUCTURE



- Audit: Internal Audit
- BoD: Board Of Directors
- BoA: Board of Auditors
- PC: Presidential Cabinet
- LD: Legal Department
- CD: Compliance Department
- BAD: Business Analysis Department
- BCD Banknote and Coinage Department
- PSPD: Passport and Security Print Department
- SD: Stamp Department
- MD: Management Department
- Ombd: Ombudsperson's Office



STRATEGIC PLAN 2015-2022

Our Strategic Plan, which was revised and approved at year-end 2015, identifies key management challenges facing the Mint over the coming years. Our planning process includes a review of our Mission, Vision and Values (see page 8) and development of a Strategic Roadmap of goals set for the period from 2015 to 2022. Our Strategic Plan for 2017 to 2022 was reviewed and approved in December 2016.

Our Strategic Plan 2015-2022 identifies key management challenges facing the Mint over the coming years.



OUR PERFORMANCE IN 2015 AND 2016

Our manufacturing facilities are state-of-the-art thanks to substantial investment in technology between 2009 and 2013.

► STRATEGY AND OUTLOOK

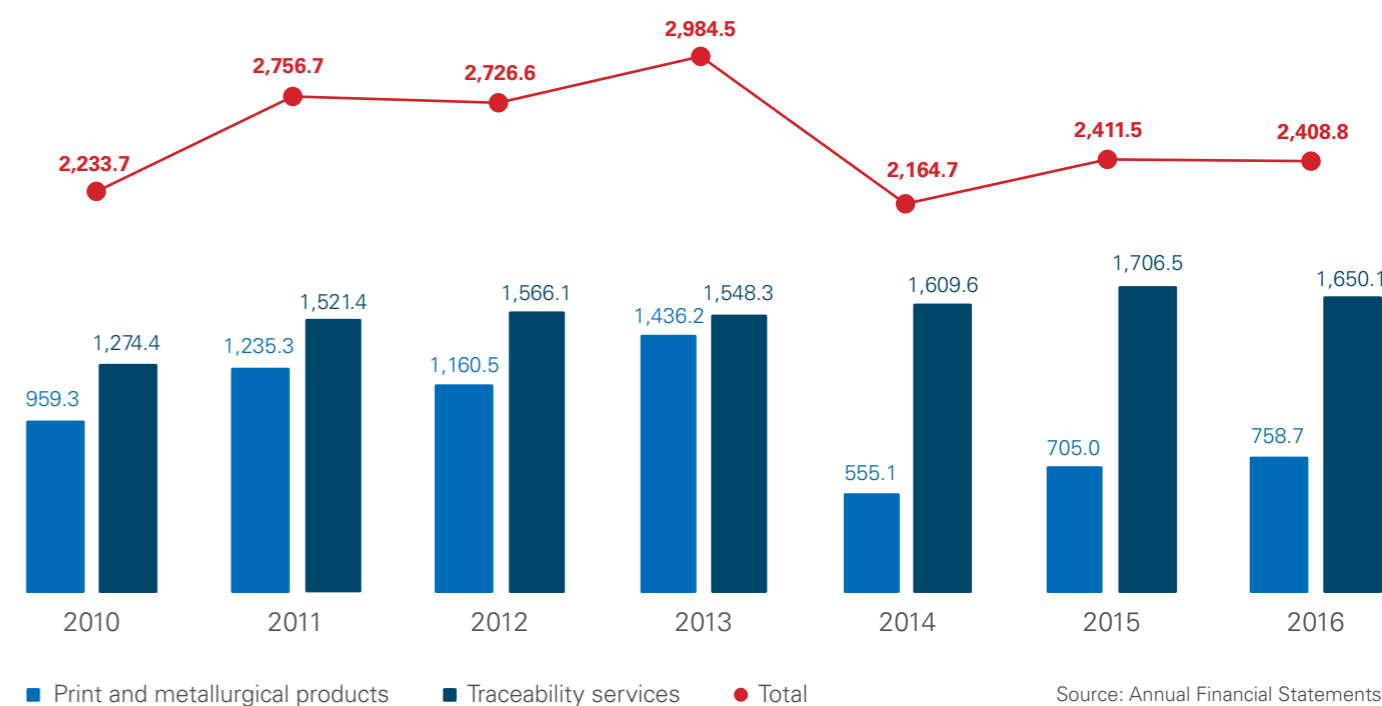
The Mint's activities under an exclusive legal mandate – which include the production of Brazil's circulation currency, postage and revenue stamps, and passport booklets – mean the organization has a mandatory commitment to its primary government customers.

However, we have continued to diversify our product portfolio and develop new markets to optimally use our production capacity and reduce dependence on our two primary federal government customers, the Brazilian Central Bank and Federal Tax Authority.

Our manufacturing facilities are state-of-the-art thanks to substantial investment in technology between 2009 and 2013. Also as part of our product and service diversification strategy, in 2015 a total of R\$ 18 million was invested in new equipment and another R\$ 12.6 million in maintenance and upgrades.

The graph below shows that service revenues have also improved since 2010:

► Changes in gross revenue R\$ million



R\$ 18.3 MILLION
INVESTED IN NEW EQUIPMENT IN
2015 AND 2016



R\$ 26.3 MILLION
ALLOCATED TO FACILITIES
MAINTENANCE AND UPGRADES IN
2015 AND 2016

**167.8
MILLION
100 PESOS**
BANKNOTES PRODUCED FOR
ARGENTINA



2015 & 2016 HIGHLIGHTS



◀ Argentine 100 pesos banknotes: an example of the Mint's export products



The Banknote and Coinage Division, while primarily serving the Brazilian Central Bank, also works to develop new customer accounts in foreign jurisdictions. The Stamps Division is engaged in efforts to incorporate new value chain tracking technologies for products such as cigarettes and cold beverages. As part of these efforts, the division has invested in training and in programs in collaboration with universities and research centers. The Passports and Security Print Division is working

to improve competitiveness and develop new customer accounts in segments in which the Mint does not have a monopoly.

In 2015 and 2016, the Mint produced 167.8 million 100 pesos banknotes for Argentina.

► Medals Club

Created in 1977, the Medals Club of the Brazilian Mint is a cultural organization that brings together enthusiasts with a common interest in medals. The Club disseminates information about numismatics in Brazil through exhibitions and public launches of medals celebrating relevant historical, cultural, religious and sporting events.

Medals are crafted to the Mint's high standards of quality. Each is a unique piece of individually minted workmanship, hand-finished with patina (aging effect), contrast (by juxtaposing polished and matte finish) or color by manually applying resin.

► **Medals and commemorative coins**

2015

In March, Rio de Janeiro's 450th anniversary was commemorated with a gold, silver and bronze medal drawing inspiration from the skyline of Morro Dois Irmãos and Leblon Beach. The Mint also produced the 1st of *March Medal* granted by the City Hall of Rio de Janeiro to citizens for services rendered to the city.

A medal commemorating the 150th anniversary of the birth of Marshal Cândido Rondon, created by the Brazilian Army and designed by our own artists, was launched in May. A mintage of 500 medals (150 gold-plated bronze, 250 bronze, 95 silver and 5 gold medals) was produced. Another medal linked to the Brazilian Armed Forces was launched the following month celebrating the 150th anniversary of the Battle of Riachuelo.

Another two medals were sports-related. ABC Futebol Clube, of Natal (RN), commissioned a medal celebrating its centenary, crafted of gold, silver, resinated silver, resinated gold-plated bronze, resinated bronze,

gold-plated bronze and bronze. Clube de Regatas Flamengo (RJ), or simply Flamengo, as it is popularly known, celebrated its 120th anniversary with a medal created and designed by the Mint.

In culture, three new medals were launched: in August, a medal celebrating the 30th anniversary of the Rock in Rio music festival; in September, a medal celebrating the 50th anniversary of the founding of the Museum of Image and Sound of Rio de Janeiro (MIS-RJ); and in October, a medal celebrating the 80th birthday of Maurício de Sousa, the creator of the comic series Monica's Gang.

In December, the city of Salvador (where the Mint's headquarters were once located) commissioned a commemorative coin as part of the *World Heritage Cities of Brazil* series.

2016

A highlight in 2016 was the launch of the Rio 2016 licensed merchandise medals. Five models were available: Olympic Torch (symbolizing the link between the ancient and modern Olympic Games), Olympic Games in the Modern Era, Mascot Tom and the City, Mascot Vinicius and the City and Mascot Ginga and Team

Brazil. The Olympic Torch medal was gold, the Olympic Games medal was silver, and the other three were bronze.

In August, the Mint launched a medal celebrating 100 years of Brazilian naval aviation, in gold, silver and bronze versions. The following month, the second centenary of the School of Fine Arts of the Federal University of Rio de Janeiro was celebrated by two commemorative coins available in gold, silver with resin and bronze with resin versions.

On October 12, a series of medals was launched in celebration of the 300th anniversary of the apparition of Our Lady of Aparecida. The medals were unveiled (in gold-plated silver, silver and bronze versions) in a ceremony held at the Basilica of the National Shrine of Our Lady Aparecida (Aparecida, SP). In November, a commemorative coin in tribute to Olinda (PE) was launched as part to the *World Heritage Cities* Series.

The last new release in 2016 was in Rio de Janeiro: three medals celebrating the 100th anniversary of the first samba recording (*Pelo Telefone*, 1916), produced in gold-plated silver, silver and bronze versions.



► **10-year passport release**

The new Brazilian passport, with a 10-year validity period, was released in July 2015 in a joint project of the Mint, the Federal Police Department (DPF), the Ministry of Foreign Affairs and the Federal Data Processing Service (SERPRO). Manufactured exclusively by the Mint, the new passport incorporates a number changes to accommodate the 10-year validity period. These include the use of a new security ink and an encryption model that ensures the integrity of, and restricts access to, the biographic and biometric data recorded on the chip. The Mint invested R\$ 7.5 million in new equipment, increasing annual production capacity to more than three million passports.

There were a number of unexpected disruptions in passport production in 2016. A disruption in the normal supply of materials for production extended over a period of approximately two months, before being finally resolved in June. That same month, one of the



laser perforation units used in the production of passport booklets experienced a critical failure, causing a second stoppage of production and triggering a quick investigation to repair the damaged component.

As a result, the normal timeframe for passport delivery was extended. To meet passport demand in the meantime, the Mint was authorized by the Federal Police Department to produce a special series of passports without the perforated numbering (but fully valid and containing all other security features). Production was stabilized and normal lead times were reestablished in October. An extra effort was required from the departments directly and indirectly involved to produce and deliver a backlog of 190,000 passports.

► **PRODUCTION AND SALES OF RIO 2016 COMMEMORATIVE COINS**

PRODUCT LAUNCHED	RELEASE THEMES	2014		2015	2016
		1 ST RELEASE	2 ND RELEASE	3 RD RELEASE	4 TH RELEASE
Gold coins	1	5,011	5,011	5,011	5,011
Silver coins	4	75,320	70,600	70,600	55,400
Bi-metallic coins	1-coin wallet	80,520	78,720	54,520	58,520
	4-coin wallet	5,020	5,020	5,020	5,020
	Circulation coins	79,900,000	79,901,800	79,926,000	79,922,000
Totals	9	80,065,871	80,061,151	80,061,151	80,045,951

With a total of 320,234,124 units produced, the Mint recorded revenue of R\$ 145,513,118.63 and estimated profit of R\$ 14,551,311.86 in 2016. Source: Monetary System Service Division (SEMO).



► **Gender and Race Equity Mark**

In November 2015 the Mint was presented with a Gender and Race Equity Mark by the Special Office for Women's Policies. In its fifth edition, the award recognizes efforts in industry to create a workplace that is free of discrimination and prejudice on the basis of gender and race. The Mint voluntarily subscribed to the Gender and Race Equity Program in

2013. We have since implemented a number of equity initiatives such as such including same-sex partners as dependents for income tax deductions, using individuals' chosen names within the company and organizing lectures on religious intolerance, human diversity and gender and race issues. [GRI G4-15]



► Hague Apostille

On August 15, 2016 the Mint and the National Council of Justice (CNJ) launched the Brazilian Hague Apostille. An apostille allows public documents to be recognized in a foreign jurisdiction under the Hague Apostille Convention, to which Brazil acceded in the second half of 2015. Apostilles make the legalization of documents among the 112 signatory countries a simpler and more efficient process, with the mutual recognition of Brazilian documents in foreign jurisdictions and vice versa. Brazilian apostilles are manufactured exclusively by the Brazilian Mint under CNJ Resolution 228 (06/22/2016) and are available from all notary offices.



► ABNT Certifications

Adding to our certification to ISO 9001 (Quality Management System), in July 2015 the Brazilian Association of Technical Standards (ABNT) certified the Mint's Quality, Health, Safety and Environment (QHSE) Management System to ISO 14001 (Environmental Management System) and OHSAS 18001 (Occupational Health and Safety Management Systems). These certifications – which were obtained following an audit by ABNT on system conformity – attest that environmental management and health and safety management requirements have been implemented.



In 2016 the Mint was certified to ABNT NBR 15.540 – *Graphic technology*, attesting to sound management of security printing processes. This standard specifies the requirements for companies in the security printing value chain.

Certifications attest to our conformity to quality, environment, health and safety and security printing requirements.



AWARDS IN 2015 AND 2016

Premio Benchmarking Brasil

The Mint was presented with awards in 2015 and 2016 by *Instituto Mais* within the *Benchmarking Brasil* program. The program selects the best case studies on corporate environmental management to strengthen and encourage adoption of best practices in social and environmental management among Brazilian companies and organizations. With a case study titled "Voluntary reforestation to neutralize greenhouse gas emissions", the Mint was awarded a technical rating higher than 7.1, ranking 11th in the 2015 edition of the program. The following year, the Mint was awarded for a case study titled "Sustainable production",

achieving a rating higher than 7.4 that earned the Company 8th place in the program.

A3P Best Sustainability Practices Award

This award program is run by the Ministry of the Environment to promote the adoption of social and environmental sustainability principles by government organizations and agencies. In 2016, the Mint was a finalist among the 90 candidates for the award in the Sustainable Use/Management of Natural Resources category, with a case study titled "Reforestation to neutralize greenhouse gas emissions".



◀ Material handling at one of our plants: inventories have been matched to demand



THE MINT AND RIO 2016

In 2014, the Mint was selected as the official supplier of medals to the Rio 2016 Olympic and Paralympic Games.

The security print materials produced for the event – including Olympic diplomas, participation certificates and commemorative certificates – were also produced by the Mint's security print facilities. The commemorative coins for the event were designed by artists from the Central Bank and the Mint, with technical support from the Organizing Committee of the Olympic and Paralympic Games. The Olympic and Paralympic medals were designed jointly by the Mint and the Rio 2016 Organizing Committee.

Brazilian Mint and at official Rio 2016 merchandise stores in Copacabana and at the Olympic Park. The gold coin paid tribute to Christ the Redeemer and the 100-meter dash. The silver coins paid tribute to Rio de Janeiro: the obverse side depicted its famed landscapes, where city dwellers engage in sports such as rowing, running, cycling and beach volleyball; the reverse side depicts aspects of Rio's and Brazil's culture and nature. Harbor porpoises, bromeliads, the Carioca Aqueduct and Bossa Nova are featured in four thematic series: Fauna, Flora, Architecture and Music.

In April and August 2015, two new gold and silver editions of the commemorative coins for the Games were released, as well as a special mintage of the R\$ 1 circulation coin. The coins are inspired by the landscapes of Rio de Janeiro and Olympic sports. A fourth set of coins was released in February 2016.



Beginning in July 2016, the commemorative coins were marketed by the Medals Club of the



5,130
OLYMPIC
MEDALS



93,754
PARTICIPATION MEDALS
70,698 OLYMPIC,
23,056 PARALYMPIC



36
COMMEMORATIVE
COINS



500g
WAS THE WEIGHT OF EACH
MEDAL

COMPOSITION



GOLD: 98.8% silver, 1.2% gold
SILVER: 100% silver
BRONZE: 97% copper, 3% zinc

THE MOST SUSTAINABLE MEDALS IN OLYMPIC HISTORY

The production of Olympic medals and coins has provided a legacy of expertise. While the Mint had already been commissioned to produce the medals for the Pan American Games (2007) and the 2011 Military World Games in Rio, the scope and specifications for the Olympic Games posed a much greater challenge that required innovative solutions in design, materials and manufacturing. More than 100 employees were involved in the various stages of production.

The medals were designed by professionals at the Mint in collaboration with the Organizing Committee of the Games. The team was given free rein in their designs, which included a new depiction of the Greek goddess Nike (who personifies victory) and recurring elements such as seeds and bows. For the first time in Olympic history, the Paralympic medals featured internal elements (steel balls) that produce a distinctive rattle allowing visually impaired athletes to distinguish gold, silver and bronze medals. The Mint combined design

innovation with creative recycling, with the steel balls taken from used machinery and the resonance chambers within the medals made of scrap metal.

In 2015, the Mint initiated a process to obtain certification from the Forest Stewardship Council® (FSC® - FSC-C128498), an international non-governmental organization represented in Brazil by the Brazilian Forest Stewardship Council. FSC certification was a requirement for our partnership with the Rio 2016 Organizing Committee. All forest-derived materials produced by the

Mint for the Games were required by the Committee to be supplied by companies conforming to FSC requirements. We are the first organization in our segment in Latin America to obtain FSC certification.

A number of other sustainability attributes were also embodied in our products for the Games. The use of recycled materials was a first for the Mint, requiring new processes to be developed for supplier acquisition and evaluation. The process of selecting recycled raw materials required new traceability systems to be implemented, including for waste materials generated by the Mint, as well as inspections and site visits at suppliers, recycling cooperatives, mines and refineries.

The gold used on the medals was sourced from mining operations that were confirmed not to use mercury in the extraction process, avoiding impacts on the soil and water. Recycled metals (copper and silver) were used in producing alloys. Part of the silver used in the production process came from mirrors, rear automotive defoggers (taken from used parts from the Mint's own fleet), silver-containing welds and x-ray plates. All materials underwent an extraction, smelting and purification process.

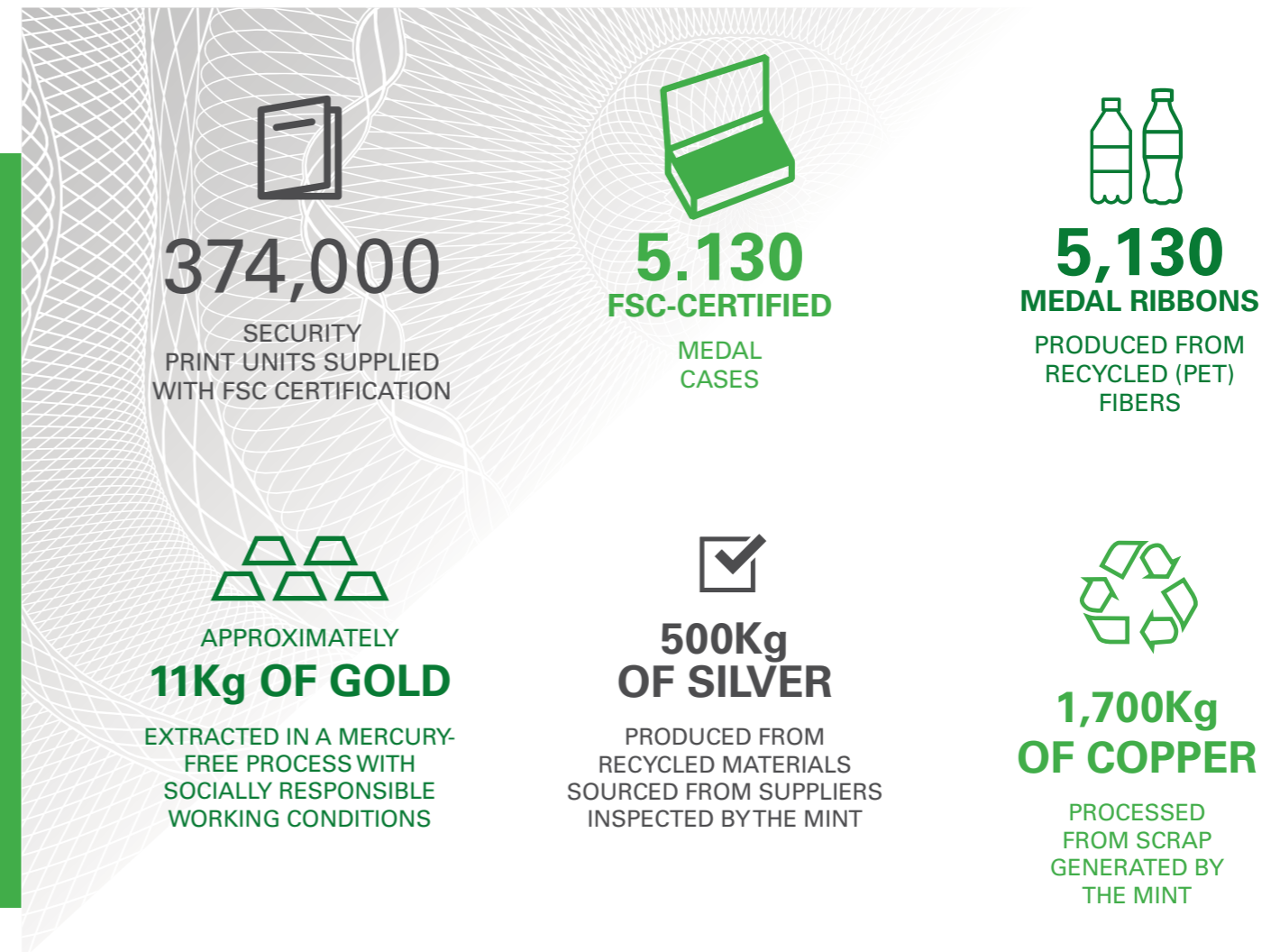
More than 40% of all copper used in the production of bronze medals came from industrial waste generated by the Mint in the form of busbars and machining swarf. The materials were decontaminated and melted at the Mint to produce the

alloys needed to make the Olympic medals. The entire recycling process was overseen and monitored by the Rio 2016 Committee. The ribbons for the Olympic and Paralympic medals contained 50% recycled PET materials. The wood for the medal cases was certified to be sourced from environmentally responsible suppliers.

These efforts to ensure the proper sourcing and handling of materials used in production were recognized internationally. In a Reuters report published in June 2016, the medals were described as "the most sustainable in Olympic history" through the use of recycled metals and gold extracted in an environmentally and socially sustainable manner.



◀ Olympic (above) and Paralympic (below) gold, silver and bronze medals



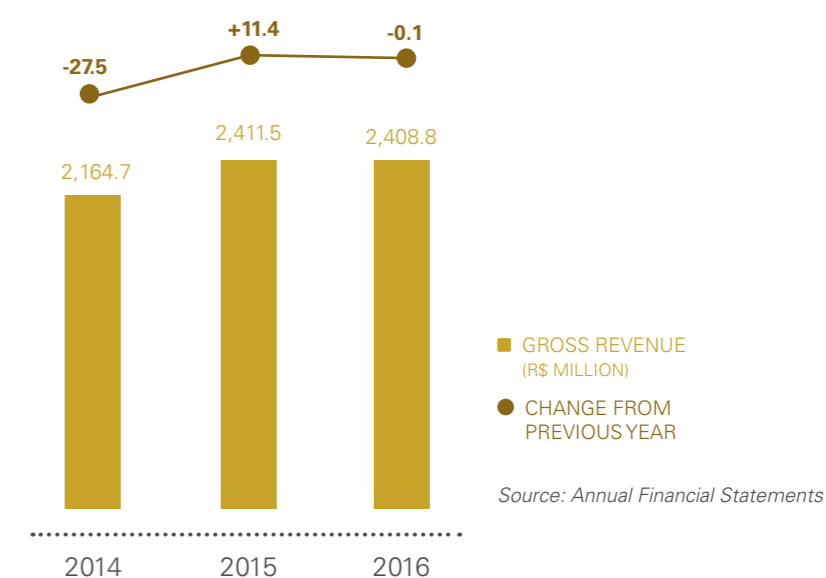


OPERATIONAL AND FINANCIAL PERFORMANCE

Traceability services were the Mint's primary sources of revenue in fiscal 2015 and 2016, accounting for total revenue of R\$ 3.35 billion in the period

Gross revenue remained largely level in the period, with especially positive revenue from tracking services for the Federal Tax Authority's Beverage Production Control System (SICOBE) and Production Tracking Control System (SCORPIOS). Due to the Central-Bank's budget restrictions, these services accounted for more than 75% of total sales in 2015 and 2016.

► Changes in revenue [GRI G4-9]

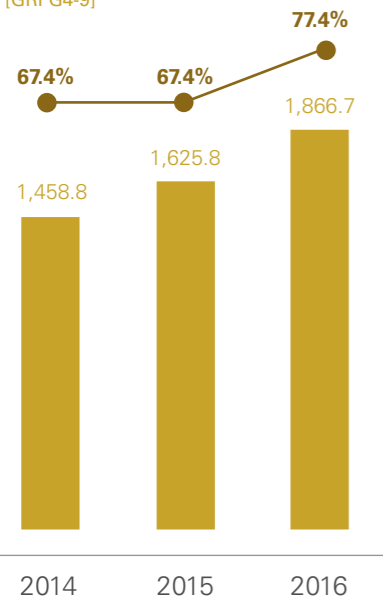


► REVENUE BREAKDOWN comparing 2014/2015/2016

REVENUE BY CATEGORY (R\$ MILLION)	2014	2015	2016	CHANGE (%) 2015/2014	CHANGE (%) 2016/2015
Tracking services	1,609.6	1,706.5	1,650.1	+6.0	-3.3
Brazilian banknotes	223.3	278.6	279.6	+24.8	+0.4
Brazilian coinage	126.5	239.7	261.3	+89.5	+9.0
Brazilian passports	108.7	129.2	157.3	+18.8	+21.7
Postage stamps	5.0	8.9	1.5	+78.0	-83.1
Foreign bank notes	8.9	11.9	2.4	+33.7	-79.8
Other products and services	82.7	36.7	56.6	-55.6	+54.2
Total revenue	2,164.7	2,411.5	2,408.8	+11.4	-0.1

Source: Annual Financial Statements

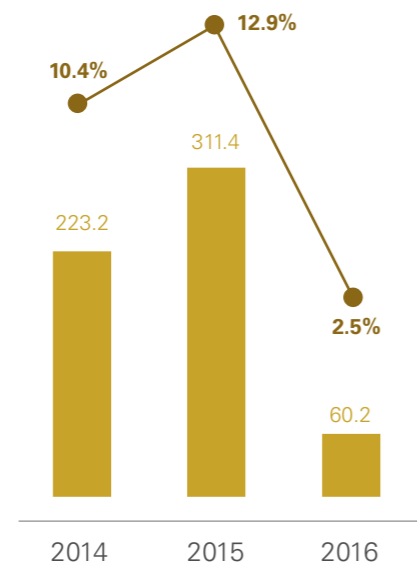
► Cost of products and services [GRI G4-9]



■ COSTS (R\$ MILLION)
● PERCENTAGE OF REVENUE

Source: Annual Financial Statements

► DECOF



■ NET INCOME (R\$ MILLION)
● PROFITABILITY

Source: Annual Financial Statements

► Passports

Passport demand remained relatively stable in 2015 and 2016 at 2.3 million units, confirming a trend continuing from early in the decade. With the start of production of passports with a 10 year validity period, a significant reduction in demand is expected from 2020, when regular five-year passports are expected to all have been replaced with new passports.

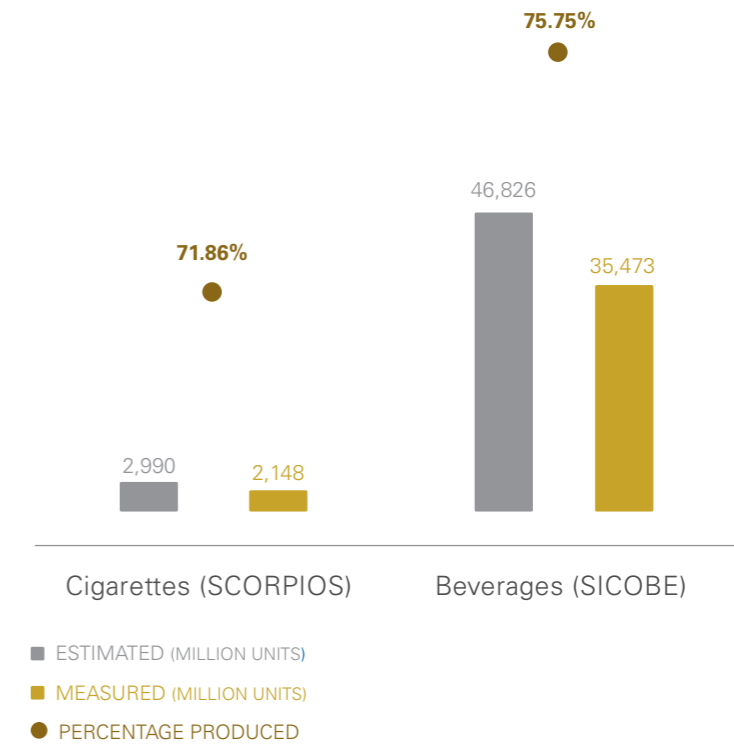
► Tracking stamps

Stamp production volumes for the SICOBE (beverage) and SCORPIOS (cigarette) systems were lower than originally estimated.

Revenue from cigarette stamps has decreased since 2012, reflecting a global decline in the consumption of tobacco products due to their adverse health effects. Government efforts to curb smoking also played a role, including laws prohibiting smoking in public places, educational campaigns and higher taxes on the tobacco industry.

Product volumes supplied to the SICOBE have remained stable since 2010, after increasing significantly from 2009 to 2011. The increase was largely due to a change in the tax enforcement methods adopted by the Federal Tax Authority.

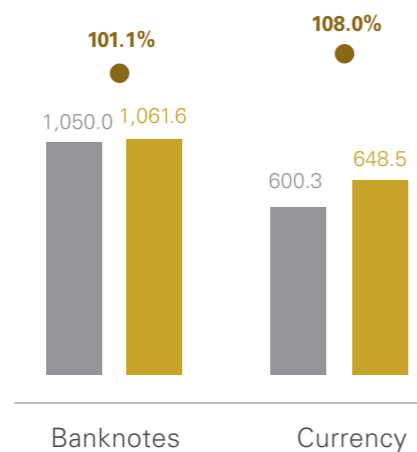
► Number of products invoiced in 2016



► Brazilian banknotes and coins

Material sourcing and quality issues prevented the Mint from fully meeting its program projections for 2015. The initial Production and Sales Program projected estimated sales of 1.05 billion banknotes and 600.3 million coins to the Brazilian Central Bank in 2016, well within our plants' annual production capacity. In October 2016, the Mint hired expert printing machinery engineers to assess banknote production line productivity and the condition of plant equipment. Based on this assessment, studies have been initiated toward upgrading production capacity without the need to invest in new machinery.

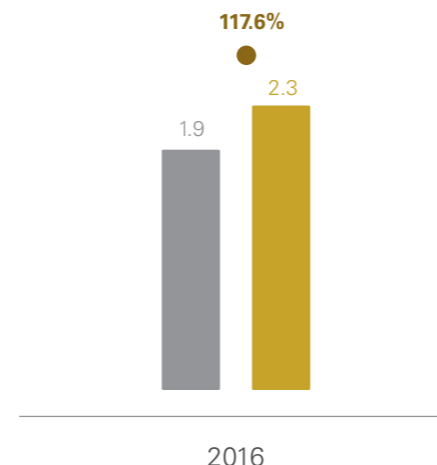
► Banknote and coinage production in 2016



■ PROJECTED (MILLION UNITS)
■ PRODUCED (MILLION UNITS)
● PERCENTAGE PRODUCED

Source: CMB Enterprise Planning Budget 2016

► Passports sold in 2016



■ ESTIMATED (MILLION UNITS)
■ PRODUCED (MILLION UNITS)
● PERCENTAGE PRODUCED

Source: CMB Enterprise Planning Budget 2016

► ECONOMIC VALUE GENERATED BY THE MINT – HISTORICAL SERIES

DIRECT ECONOMIC VALUE GENERATED - REVENUE (R\$)*	2014	2015	2016
	R\$ 2,195,312,983.10	R\$ 2,483,472,104.82	R\$ 2,460,333,447.13
ECONOMIC VALUE DISTRIBUTED (R\$)*	2014	2015	2016
Operating costs	R\$ 1,494,856,478.07	R\$ 1,768,201,399.06	R\$ 1,665,647,868.49
Employee salaries and benefits	R\$ 308,357,197.30	R\$ 303,990,648.62	R\$ 553,199,679.50
Payments to providers of capital	R\$ 136,936,449.25	R\$ 157,826,955.62	R\$ 52,688,472.58
Payments to government	R\$ 112,976,377.96	R\$ 55,087,563.43	R\$ 128,621,387.45
Total	R\$ 2,053,126,502.58	R\$ 2,285,106,566.73	R\$ 2,400,157,408.02
ECONOMIC VALUE RETAINED (R\$) ("DIRECT ECONOMIC VALUE GENERATED" LESS "ECONOMIC VALUE DISTRIBUTED")	2014	2015	2016
	R\$ 142,186,480.52	R\$ 198,365,538.09	R\$ 60,176,093.11

Source: Statement of Added Value



STAKEHOLDER ENGAGEMENT

In addition to our permanent commitment to the Federal Government as a supplier of banknotes and coins, we engage with a range of stakeholders in a number of ways: as a state company; as an employer; as a supply-chain customer; and as a supplier of services and products

that are essential to Brazilian society. This chapter summarizes our key achievements in stakeholder engagement in 2015 and 2016.

OUR KEY STAKEHOLDERS

► KEY STAKEHOLDERS

STAKEHOLDER GROUP	DESCRIPTION	RELATIONSHIP	TYPE OF ENGAGEMENT	MATERIAL TOPICS
Internal stakeholders	Our internal stakeholders comprise three major groups: employees, managers and senior management (executive directors, the chief executive and boards and committees)	The Mint has people in many different roles all working to deliver high-quality products. We provide a workplace that is suited to their needs and services that help to improve their performance and quality of life.	Continuous through people management initiatives (training, climate survey, internal communications, etc.)	Ensuring financial sustainability; anti-bribery policies and practices; customer relationship management; development of human capital; operational eco-efficiency; relationship with the government and regulators
Federal government	This includes oversight bodies (Ministry of Finance), regulators (Ministry of Planning) and audit bodies (Federal Audit Court, Ministry of Transparency, Oversight and General Controllershship (CGU), and Office for Management and Governance of Government-Owned Companies)	In addition to being our primary customer, the Federal Government also participates in our management, internal controls and ensuring compliance with administrative acts.	Continuous through Board of Directors meetings, management reports and periodic compliance and internal controls questionnaires	Ensuring financial sustainability; anti-bribery policies and practices; accountability and transparency; brand building
Customers	In addition to our primary customers (Federal Government agencies including the Central Bank of Brazil, the Federal Tax Authority, the Federal Police and the Postal Service), several other public and private institutions and companies	We invest in state-of-the-art technology to ensure maximum quality in our products and processes, while delivering efficient customer service and solutions.	Continuous, through our sales and customer relationship departments	Customer relationship management; operational eco-efficiency; technological development; product quality; accountability and transparency
Suppliers	Companies supplying materials and services to the Mint	Suppliers are engaged through competitive procurement and must conform to a number of requirements, including technical, safety, quality and sustainability requirements.	Continuous, through contact with the departments managing competitive procurement, contracting and supplier performance assessments	Customer relationship management; research and development; brand building
Community	The general public and civil society organizations	The circulating currency and passports produced by the Mint are used by the general public. In addition, the Mint invests in social and environmental responsibility and brand-building initiatives such as the <i>Conheça a CMB</i> program and this Sustainability Report. Read more in Social and environmental responsibility initiatives.	Ad hoc initiatives such as social responsibility projects, communications (media office, publications in general, information published on our official website, our Sustainability Report)	Customer relationship management; product quality

Source: The materiality process conducted in 2016 by Report Sustentabilidade

Other stakeholder groups include foreign governments (potential currency and/or passport production customers), third-party employees,

the National Mint Workers' Union, external research centers involved in our projects, competitors and peers in other jurisdictions, and the media.

INTERNAL STAKEHOLDERS

At year-end 2016 the Mint had a total of 2,934 employees (including apprentices and interns). Developing our human capital is a material issue for the Mint, and is supported by a range of employee development

and recognition initiatives. All Mint employees work in the Southeast of Brazil (except one employee working in Brasilia).

▶ TOTAL WORKFORCE BY FUNCTIONAL LEVEL *

	2014		2015		2016	
	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN
Board of Directors ⁸	9	3	9	3	9	3
Executive Board	4	1	4	1	4	1
Middle Management ¹	149	70	140	70	141	69
Advisory ²	40	31	40	23	39	21
Coordinator/Supervisor ³	101	26	99	24	99	24
Other Bona Fide Positions ⁴	43	44	41	40	41	40
Management ⁵	624	208	583	195	567	191
Production ⁶	742	354	727	334	723	334
Production Support ⁷	369	78	356	71	354	70
Apprentices	39	52	30	66	42	68
Interns	17	54	27	78	33	61
Total by Gender	2,137	921	2,056	905	2052	882
Total	3,058		2,961		2,934⁹	

¹ Superintendent; Deputy Superintendent; Executive Manager; Manager; Head of Audit; Cabinet Chief; Ombudsman.

² Special Advisor; Advisor to the Executive Board; Advisor; Technical Assistant to the Executive Board; Technical Assistant.

³ Coordinator; Supervisor.

⁴ Senior Consultant; Consultant; Specialist; Inspector; Currency Expert; Floor Operator; Executive Board Secretary; Secretary.

⁵ Employees without assigned roles working at: Presi, Gabin, Dejur, Depac, Deemp, Audit, Disel, Dicem, Dipim, Diges, Detic, Decof, Degep, Decec, Delog, Desec, Degec.

⁶ Employees without assigned roles working at: Deser, Deced, Demom, Depas, Depim.

⁷ Employees without assigned roles working at: Detes, Decos, Detec, Demaq, Decem, Detip, Decop

⁸ Board members and substitutes

⁹ Our workforce – excluding board members, directors, interns and apprentices – comprises 2,713 employees as specified in the table on page 53.

▶ Skills management and lifelong learning

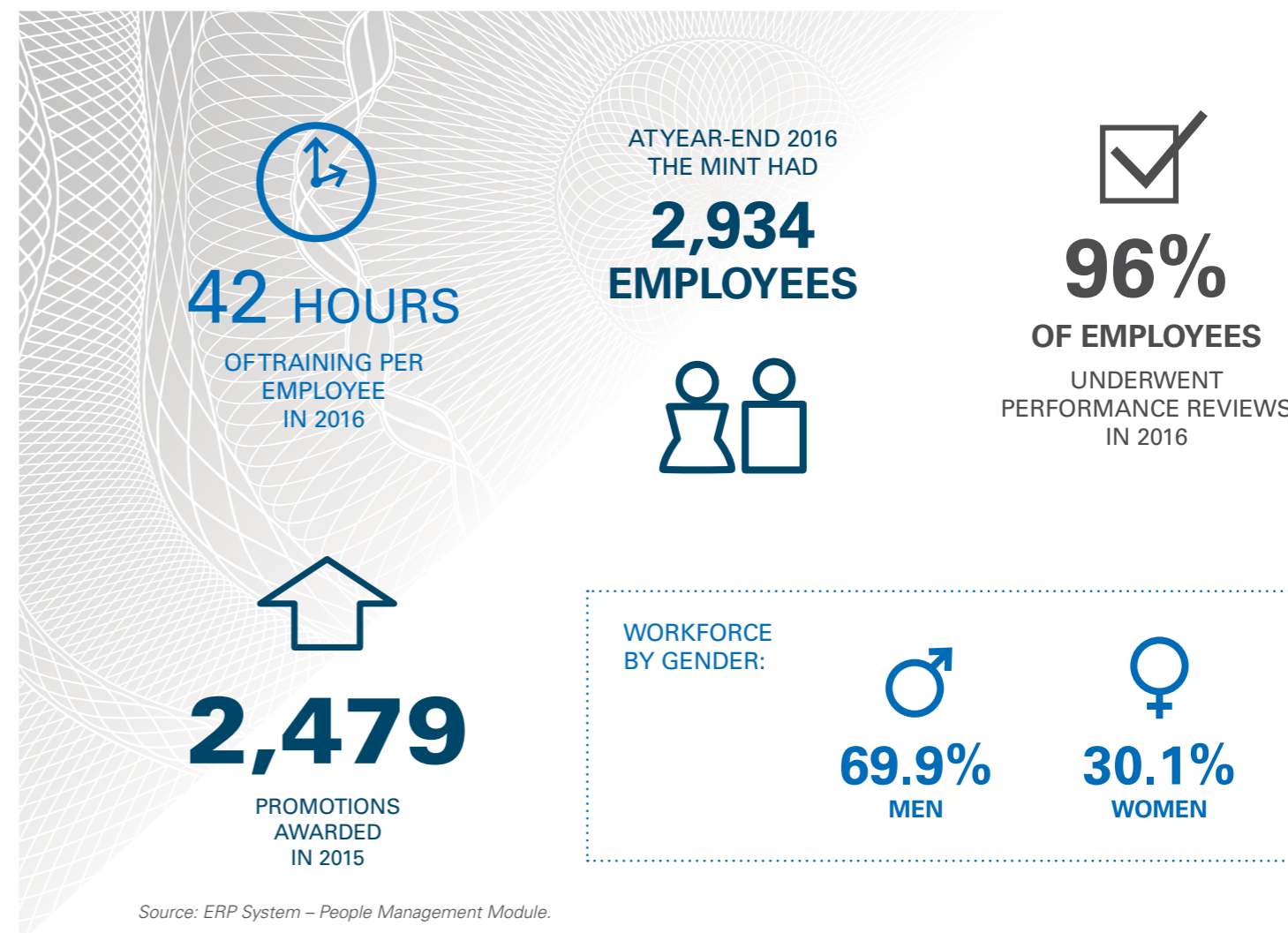
Our training and development model is transitioning from a focus on work execution only to a broader corporate education approach in order to develop required technical and behavioral skills through the development, transfer and practical application of knowledge.

In 2015, a Corporate Knowledge Management and Training Department was created to develop and implement an education strategy focusing on business objectives. Its mission is to provide the corporate skills and competencies needed for efficient and effective performance.

The Department aims to be recognized as a corporate university by 2018.

Other training and education initiatives include a renovation of the training center at our headquarters site in Santa Cruz and the use of the Praça da República Palace in downtown Rio de Janeiro, a historical heritage building, for training activities. Further investment in managerial training and development is also planned.

The Mint's knowledge management model is transitioning from a training and development model to a corporate education model.





Part of the operations team at the banknote plant: a larger number of employees underwent performance reviews in 2016



- Workplace stretching and exercise (shown on the right). In addition to regular exercise, since 2014 the Mint has organized a Workplace Exercise Marathon in which employees engage in exercise routines facilitated by physiotherapists to reduce cases of work-related musculoskeletal disorders and medical leave.
- Initiatives to prevent musculoskeletal disorders, with a focus on reducing exposure to ergonomic hazards, and implementation of Workplace Ergonomics Assessments.

for substations and foam forming liquid for fire systems. As part of our Emergency Readiness Plan, civil and volunteer fire brigade training programs were held to supplement regular training taken by Occupational Safety, Maintenance and Project department employees.

New fire detection and alarm systems, automatic sprinkler systems and safety devices for flammables storage areas are planned to be installed by 2020. The total estimated investment of R\$ 15.2 million includes design, training and procurement.

Fire, panic and emergency readiness planning has included training and further investment in 2015 and 2016. In addition to regular (partial and full) evacuation drills, additional safety equipment has been purchased including insulation mats

Occupational health and safety

The Mint addresses workplace injuries and incidents in accordance with internal procedures on incident investigation, control and record keeping. The Mint has an on-site infirmary with an attending physician, practical nurse and driver available 24 hours a day. Injuries are reported through the infirmary, where first aid is provided. Injury metrics are reported in accordance with ABNT NBR 14.280, Regulatory Standard 4 and Ministry of Labor Resolution 3.214/78. Third-party employees have not been included in injury rates; injury rates for these employees are documented with information provided by contractors, contract managers and the Mint's infirmary.

2.0% in 2016 due to higher production rates in the last quarter of the year. Safety technicians have initiated daily monitoring of the departments with the highest incidence rates. Their observations about identified risks are included in Toolbox Safety Talks.

Occupational illnesses declined by 43% in 2015 compared with the previous year. A number of workplace quality initiatives

contributed to the positive performance, including:

- A diet, nutrition and health management program (*Nutrivida*) conforming to the National Policy on Diet and Nutrition (PNAN), which provides strategic nutrition management consultations to Mint employees. In 2015, *Nutrivida* provided 2,146 consultations, a 45% increase from the previous year;
- Vaccination campaigns, including vaccinations for influenza, hepatitis A + B, HPV and other diseases. In 2015, the first dose of hepatitis A + B vaccine was administered to 749 employees; the second dose to 711 employees and the third to 21 employees. First-dose HPV vaccination was administered to 1,418 employees, the second dose to 1,312 employees and the third dose to 900 employees. Influenza vaccine was administered to 2,298 employees. Vaccination campaigns covered Mint employees, third-party workers, young apprentices and trainees from the age of 17.



**R\$ 15.2
MILLION**

TO BE INVESTED IN FIRE
PROTECTION SYSTEMS BY
2020

The total number of workplace injuries declined from 2013 to 2015, reflecting the effectiveness of the Mint's safety program – which includes occupational risk maps, inspections, enhanced Toolbox Safety Talks, internal audits and other initiatives. The total injury rate increased from 1.2% in 2015 to

GOVERNMENT

The Mint uses a proactive approach to engagement with oversight and regulatory bodies

The Brazilian Mint is a federal government-owned company under the auspices (and oversight) of the Ministry of Finance. We are also subject to the regulations of and audits by the Federal Audit Court (TCU), the Ministry of Transparency, Oversight and General Controllorship (CGU) and the Office for Management and Governance of Government-Owned Companies (SEST, under the Ministry of Planning, Development and Management).

Pursuant to Decree 2122 of January 13, 1997, the Board of Directors includes representatives from the

Ministry of Finance and Planning and the Central Bank of Brazil. As a Federal Government-owned company, the Mint primarily serves the interests and requirements of the Federal Government, without neglecting, however, its own financial and operational sustainability.

The Mint has used a proactive approach to engagement with regulators and oversight bodies, including regular interaction and efforts to effectively anticipate government needs and requirements.

CUSTOMERS

The Federal Government and its agencies are the Mint's primary customers.

Our relations with these customers are managed by three different departments depending on the type of product or service provided.

The banknote and coinage sales department is responsible for our contract with the Central Bank of Brazil, which determines the level of demand for Brazilian currency, as well as for our contracts with foreign agencies for the production of circulation banknotes and coins. This department is also responsible for the planning, oversight, coordination and control of medals sales and customer relationship management.

The banknote and coinage department's most significant project in 2015 involved meeting demand from the Rio 2016 Olympic and Paralympic Games. This included producing commemorative coins and developing the designs for medals and other articles for the Games (read more in The Mint and Rio 2016). In addition to regular interaction with the Central Bank of Brazil (which includes sales of commemorative coins), the Banknote, Coins and Medals Sales Department is also responsible for our relationship with

the Central Bank of Argentina (which has commissioned the production of 100 pesos banknotes by the Mint) and has initiated negotiations toward the supply of circulating currency to Paraguay and Venezuela.

The passport and security print sales department is responsible for our relations with the Federal Police Department and the Ministry of Foreign Affairs, which control the production and issuance of Brazilian passports. It also supplies security print materials to more than 30 customers.

The first samples of Brazil's new 10-year passport were delivered in 2015. This department also coordinates sales of smart ID cards with digital certification. A number of new products and services with unique security and production-process features were developed in 2015/2016. These were presented to potential customers, especially in the Midwest and South of Brazil, where most of our government and private customers are located. One of our competitive differentiators in this market is the Mint's reliability and expertise in security print and confidential data storage.

The Revenue stamp department primarily supplies products to the Federal Tax Authority. In 2015 the Mint initiated an important study on logistics systems. Revenue stamps, which currently are delivered to the Federal Tax Authorities, will now be distributed directly to taxpayers. As part of our efforts to expand our customer base, we have further developed our offering of revenue stamp solutions and services.

► Satisfaction survey

Every year, the Mint conducts a satisfaction survey with our primary customers to measure our performance during the fiscal year and inform improvements as part of the PDCA cycle.

The satisfaction survey methodology consists of tabulating data from questionnaires to provide arithmetic metrics in an impact matrix that weights significance versus satisfaction. In 2013 and 2014, survey questionnaires were answered by the Federal Tax Authority, the Federal Police Department, the Ministry of Foreign Affairs, the Brazilian Postal Service, the Central Bank of Brazil and the Federal Council of Medicine. In 2015, the Civil Aviation Agency and the Federal Office for Legal Aid were included in the survey. Fundação Getulio Vargas (FGV) and Companhia Paulista de Trens Metropolitanos (CPTM) were included in 2016.

Satisfaction rates were shown to have improved in 2016, although not meeting the target rating.

After completing the survey, the Mint implements actions based on survey results to continually improve customer satisfaction levels.



◀ As a federal government company, the Mint initiated a process in 2016 to bring the organization into conformity with the new Government Companies Act

SUPPLIERS

Services and products are procured taking account of social and environmental sustainability criteria

As a government-owned company, the Mint is subject to the requirements of Act 8.666, which establishes general rules on government procurement and contracting for works, services and purchases. This piece of legislation is designed to ensure that government procurement decisions are fair, in the government's interest and contribute to Brazil's sustainable development. Procurement and contracting processes are managed by the Procurement Management Department, which is responsible for receiving and processing requisitions made by other departments, establishing requirements for each tender procedure, estimating prices and ensuring compliance with any

additional legal requirements, which includes conformity to environmental and social requirements under Act 8.666.

The Mint also establishes price margins within which preference is given to local suppliers, and especially small businesses.

In 2015 and 2016 the Mint's payments to suppliers exceeded R\$ 3.49 billion. Our supply chain includes companies supplying printing materials (ink, solvents, papers, films, etc.), packaging (including cartons, labels, envelopes, glues, seals and adhesives) and metals in general (used in the production of coins and medals).

COMMUNITY

In addition to producing the circulation coins and banknotes used by Brazilian society and the passports issued by the Federal Police, the Brazilian Mint also engages directly with Brazilian society through a range of initiatives. Read about some of our key initiatives below:

► Young Apprentice Program

Each year the Mint mentors a group of secondary education students aged 14 to 24 in our Young Apprentice Program. Besides training students for the job market, the program also provides an additional source of income for families living in communities where we operate (Santa Cruz, Itaguaí and Seropédica). At year-end 2016, the Mint had 99 young apprentices from the industry-led education service (SENAI) and another 12 students from Instituto Brasileiro Pró Educação, Trabalho e Desenvolvimento (ISBET).

Students spend four hours each day at the Mint in a range of educational and administrative activities. In addition to earning wages, students receive transportation tickets, meal vouchers and outpatient medical services.

► Conheça a CMB

The *Conheça a CMB* program was initiated in 1990 to offer guided visits to the Mint. Initially geared to students from public and private schools, in 2006 the program was extended to employees' family

members and in 2012 the initiative was extended to the general public. The purpose of the program is to create a channel for communication between the company and communities, enhancing transparency about what we do and how we operate. In addition to learning about how things we use in our daily lives – such as banknotes and coins – are produced, visitors can also go back in time and learn about the Mint's 300 years of history.

The program comprises three modules: *Empresa Escola*, which brings together students, teachers and Mint employees in guided activities; *Empresa Família*, which enhances engagement between the Company and employees and family members; and *Empresa Cidadão*, which opens our doors to Brazilian and foreign citizens interested in learning about the Mint's history and manufacturing processes.

Between 2013 and 2016, around 11 thousand people visited the Mint through the program, in a total of 447 guided visits. In visitor satisfaction surveys, nearly all respondents (98.6%) rated their experience

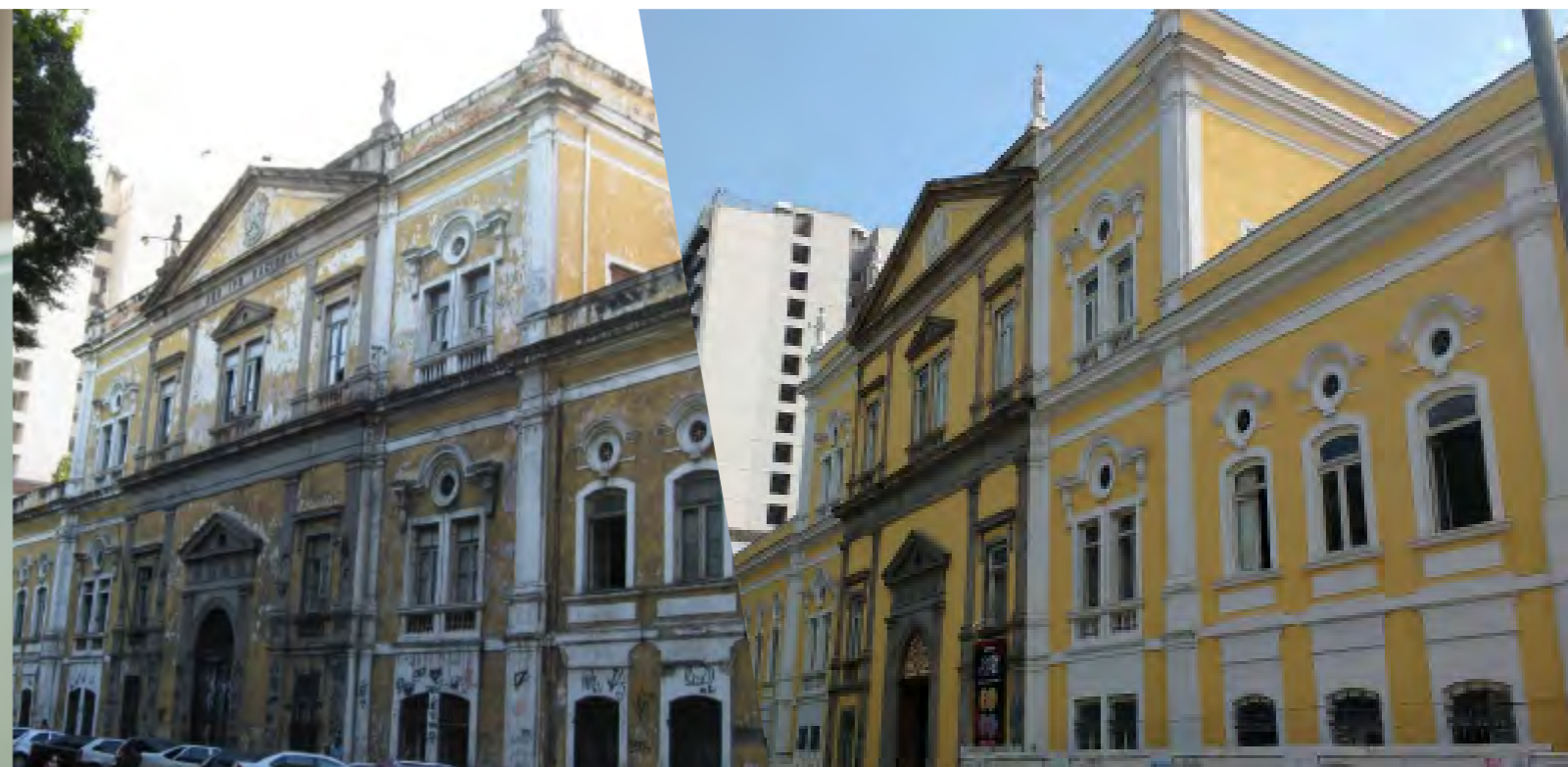
positively across dimensions such as Registration, Security Clearance, Transportation, Reception, Food and Guided Tour.

► Restoration of the Praça da República Palace

Work has continued on the restoration of the palace at 26, Praça da República in downtown Rio de Janeiro (shown in the photo below). The 19th century building was once home to the Royal Museum (currently the National Museum) and the National Library, and later hosted the Rio de Janeiro State Court of Justice and the Justice Museum. The Mint has owned the building since 1986, and initiated restoration works in 2009.

The project is currently in its third phase, which includes final installation and retrofitting work. The Mint's Knowledge Management and Corporate Education Department is supervising the works in a technical collaboration with Instituto Herbert Levy.

Young
Apprentice: a
program geared
to students in
communities
where we
operate





Stockphoto / Weerapatkardumong

SOCIAL AND ENVIRONMENTAL RESPONSIBILITY

SOCIAL AND ENVIRONMENTAL RESPONSIBILITY

The Mint has identified sustainability as a fundamental value for the business. This translates into a management approach that takes account of the social and environmental – as well as economic – aspects of our activities. Essentially a manufacturing enterprise, the Mint has certified environmental management processes in place to minimize impacts from our production operations. We also invest in social and environmental programs that support the protection and restoration of natural resources as well as human development in the communities where we operate.

A milestone in our corporate responsibility journey was our accession in July 2015 to the

Brazilian Business Council for Sustainable Development (CEBDS), a not-for-profit, civil society organization created in 1997 to engage businesses, government and civil society in promoting sustainable development initiatives in Brazil's corporate community. The Council currently brings together 70 of Brazil's largest business groups and organizes a range of events and meetings to share experience and network. As a member of CEBDS, the Mint has shared experience and lessons learned with other members on issues such as sustainable procurement, energy efficiency, resource management and climate change. [GRI G4-2, G4-16]

ENVIRONMENTAL MANAGEMENT

Our QHSE Policy supports environmentally responsible operations that protect the health and safety of employees and third-party workers.

Our Integrated Quality, Occupational Health & Safety and Environment (QHSE) Policy was implemented in 2014. In 2015, the Mint's Environmental Management System and Occupational Health & Safety Management Systems were certified by the Brazilian Technical Standards Association (ABNT) to ISO 14001 and OHSAS 18001, respectively. Our approach to environmental management focuses on protecting and respecting people and nature, compliance with statutory and regulatory requirements and identifying and mitigating risks. The Mint's QHSE Policy supports

environmentally responsible operations that protect the health and safety of our staff.

In 2010 the Mint became a signatory of the Government Environment Agenda (A3P), a program run by the Office for Environmental Stewardship and Institutional Coordination under the auspices of the Ministry of the Environment (SAIC/MMA). The purpose of the program is to foster social and environmental responsibility and the incorporation of sustainability criteria in government.

Key ongoing initiatives include: water recycling systems in our production processes, construction of systems for the use of treated wastewater; energy-saving campaigns; and consumption efficiency programs. The Mint periodically reports to the Ministry of the Environment on the status of proposed initiatives.

► **Waste management**

Waste management practices at the Mint conformed to Brazil's National Waste Management Policy under Act 12.305/2010. A third-party company works with the Mint's technical team to provide integrated waste management services, from waste sorting at the Santa Cruz plant to final disposal. Industrial and recyclable waste materials are sorted, segregated, weighed and stored temporarily at a 5,200 square-meter waste depot with modern infrastructure.

Since 2015, banknote waste materials have no longer been landfilled and are now co-processed as a more environmentally friendly disposal method. In addition to extending the useful life of landfills, the new disposal method allows energy to be produced from waste. 173 metric tons of waste were co-processed in 2015. Waste volumes decreased significantly in 2016 due to the reduced production rates.

The Mint works continuously to reduce waste volumes and develop lower-impact, environmentally friendly disposal methods. While our environmental management department has not yet established a target minimum percentage of recycled raw materials in our production processes, significant progress has been made in this direction: [G4-EN2]

- **Development of an environmentally viable solution for recycling ink residues from banknote printing** (ink 'cakes') as a raw material for recycled aggregate for use in construction;
- **Feasibility tests on the use of copper scraps in the manufacture of medals.** The use of recyclable materials from plant waste will reduce the requirement for externally sourced copper for medal production while creating value from waste materials;

- **Use of recycled silver** from mirrors and plates disposed of by the Mint;
- **Embroidered ribbons for Olympic and Paralympic awards** made from recycled PET (polyethylene terephthalate) fibers;

The tables on page 72 show the amount of waste (hazardous and non-hazardous) disposed of from 2014 to 2016, broken down by disposal method and treatment technology.

► **Energy consumption**

Electricity and piped gas are measured on the basis of monthly emissions indicated in monthly utilities invoices. Diesel oil is used by stationary generators at the Mint; information on fuel consumption is compiled from materials handling reports generated by an automated management system. Gasoline, diesel oil and liquefied petroleum gas are used by the Mint's vehicle fleet and information has been compiled from the relevant departments to develop the Mint's greenhouse gas emissions inventory.

A number of initiatives have been implemented since 2014 to reduce energy consumption. These included a series of lectures delivered to employees to raise awareness and a communication campaign on energy efficiency. The Mint's Ombudsman's Office has also encouraged employees to raise concerns related to energy saving. In another initiative, the lighting system at our office building was retrofitted with modern, energy-saving luminaries, lamps and ballasts.

The Mint's greenhouse gas (GHG) emissions inventory is developed in accordance with the GHG Protocol, the method most widely used

by companies and governments globally to prepare greenhouse gas inventories. Inventory information is independently verified and since 2013 has received a Gold Mark for reporting complexity. For greater transparency, since 2013 the Mint has published its GHG emissions reports on the Public Emissions Register of the Brazilian GHG Protocol Program (<https://registropublicodeemissoes.com.br/index.php/participante/1830>).

NO_x, SO_x and other significant air emissions are measured twice per year in accordance with the requirements set out in the Mint's Operation and Recovery License. Emissions information is obtained from instantaneous data collected over a maximum period of 18 hours per year. G4-DMA Emissions

► **Water management**

Since June 2013, the Mint has recorded the volumes of chemicals and wastewater produced in the recycling of cleaning solutions used in printing and manufacturing operations. A Water Recycling System (Aguasave) operating since April 2013 has reduced chemical and water consumption in our printing and manufacturing processes by 90%. From its entry into service to

year-end 2016, the Aquasave system has reduced the consumption of cleaning solutions by 34 million liters, generating savings of R\$ 3.7 million from 2014 to 2016.

Our efforts to reduce our usage of materials and natural resources have included lectures, information campaigns and retrofits with more efficient appliances.

202.8 METRIC TONS

OF EMPTY DRUMS RECYCLED, GENERATING REVENUES OF MORE THAN R\$ 200,000

173 METRIC TONS

OF COTTON FIBER PAPER SENT FOR CO-PROCESSING

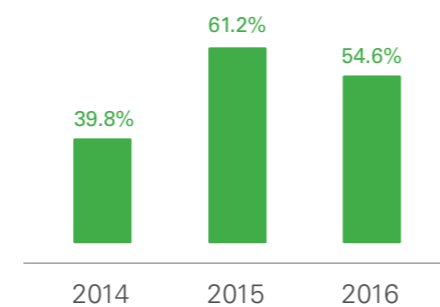
320.7 METRIC TONS

OF SCRAP RECYCLED IN THE STEEL MAKING INDUSTRY, GENERATING REVENUES OF R\$ 187,300

The graph on the right shows the Mint's recent waste recycling and reuse figures. Recycling and reuse methods include composting into organic fertilizers, co-processing in cement kilns, reprocessing, metals recovery and re-refining of oil.

The disposal of environmental liabilities (disk storage drums) in 2015 increased the percentage of recycled waste. Without the environmental liabilities, the percentage of waste recycled decreased in 2016.

► **WASTE RECYCLED OR REUSED (%)***



*Not including construction waste. Source: Waste Manifest



► **WASTE SEGREGATION**

The Mint has a waste segregation system in place conforming to Decree 5940 of October 25, 2006, including color-coded bins for the different types of waste. In accordance with Conema Resolution 55/2013, blue bins are for recyclable materials and gray bins are for non-recyclable materials.

Employees have attended lectures to raise awareness about the importance of segregating waste materials. Organic waste from the canteen is now sent for composting; each month, 30 metric tons of kitchen waste are composted into fertilizer.

SOCIAL AND ENVIRONMENTAL RESPONSIBILITY INITIATIVES

The Mint has a range of programs in place to promote engagement with local communities. Learn more about our key social and environmental development programs.

► Supporting recycling cooperatives

In compliance with Federal Decree 5.940, our recyclable waste is segregated and delivered to waste picking associations and cooperatives. The materials we donate to waste picking cooperatives have increased their annual revenues by 1,200% from a June 2014 baseline.

Since 2013, the range of waste materials donated to cooperatives has also been expanded. In monetary terms, the Mint is estimated to have increased cooperative revenues by 700% from 2013 to 2016. This estimate is based on the amounts the Mint was previously paid for these materials under lifecycle waste management agreements. The company relinquished this income in donating the materials to the relevant associations.

In 2015 and 2016, approximately 205 metric tons of waste (including scrap metal, paper, corrugated cardboard and other recyclable materials) generated estimated revenues of R\$ 134,000 for waste picker cooperatives. Cooperatives were invited through a public notice and selected through a draw. All qualified cooperatives receive waste materials from the Mint over a period of six months.

► Reforestation in a Federal biological reserve

As part of our efforts to neutralize greenhouse gas emissions from our operations, in 2013 the Mint undertook a voluntary commitment to support a 2,548-hectare Federal biological reserve in Rio de Janeiro State, spanning the municipalities of Rio das Ostras, Casimiro de Abreu and Macaé. The Mint plans to invest R\$ 4 million in the reforestation of a 230 hectare area with Atlantic Forest

species, the original biome in the region. By 2018, an estimated 128 hectares will have been reforested with 205,000 trees.

The reforestation program is managed by environmental consultants Acácia Amarela. Saplings of more than 50 different Atlantic Forest species are being purchased from suppliers in Silva Jardim, Casemiro de Abreu and Rio das Ostras.


The program is especially important given that the reserve is home to 20% of the surviving population of golden lion tamarins, which are native to Atlantic Forest habitats. The Mint's reforestation program

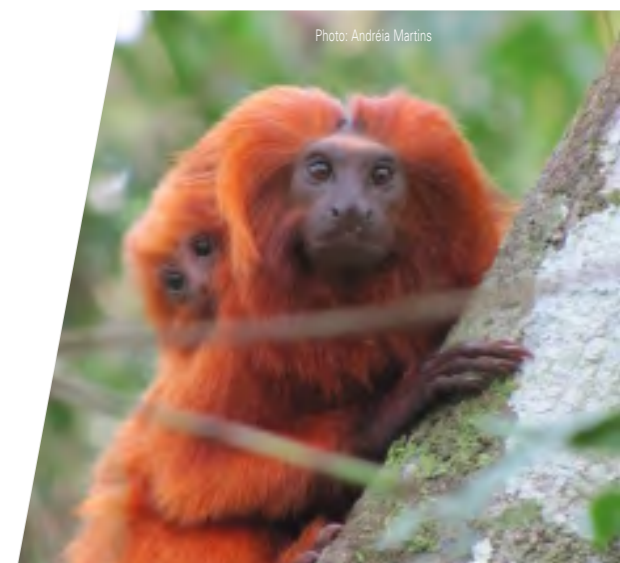
will expand the forest cover in the area and connect islanded patches inhabited by the endangered primates. As the motifs on the R\$ 20 banknotes we produce, golden lion tamarins have a special significance for the Mint.

Associação Mico-Leão Dourado, a non-governmental organization dedicated to the preservation of this endangered species, is also supporting the reforestation initiative.

In addition to contributing to environmental preservation, the Mint is also supporting the regional economy by sourcing saplings and other materials from local suppliers. The workforce for implementing

and maintaining the program has also been sourced locally. These investments have an especially significant impact on low income municipalities such as Casimiro de Abreu, Rio das Ostras, Macaé, Silva Jardim and Rio Bonito), which have a combined average income per capita of only R\$ 390 according to data from the Brazilian Institute for Geography and Statistics (IBGE) for 2013.


20%
OF THE SURVIVING
POPULATION OF GOLDEN
LION TAMARINS LIVE IN
THE FEDERAL BIOLOGICAL
RESERVE



◀ The materials we donate to waste picking cooperatives have increased their annual revenues by 1,200% from a June 2014 baseline.



Before (left) and after reforestation: 205,000 trees by 2018



GLOSSARY OF TERMS

Intaglio

A level 1 (overt) security feature produced by directly applying ink on the polymer or paper substrate using a printing plate on which the art is produced in the form of recesses up to 100 µm deep. The resulting print has a tactile relief.

Computer to plate (CTP)

A printing plate production process in which art created in a desktop publishing application is output directly to a printing plate by laser engraving or machining.

Statement of Added Value

A Statement of Added Value is a financial reporting statement that summarizes the wealth created by an organization in a given period and how it has been distributed. As a financial reporting document, the information contained in a Statement of Added Value must be compiled from accounting records in accordance with applicable Accounting Standards and on the accrual basis of accounting [<http://www.portaldecontabilidade.com.br/tematicas/despesas.htm>] Resolução CFC 750 de 1.993 [https://www.econeteditora.com.br/bdi/res/ant/resolucao750_cfc_1993.asp]. The wealth created by a company, when measured based on the concept of added value, is calculated as the difference between the wealth produced by the company and the value of the goods and services produced by third parties and used in the company's production process.

Electroplated blanks

Raw materials used in coinage production consisting of ferrous discs with a non-ferrous, hot dipped galvanized surface finish to produce the different color tones in the Real coin family.

Heat shrink film

Plastic film that will shrink in both directions when processed by heated equipment (heat shrink tunnel), but will remain dimensionally stable upon returning to ambient temperature. Used in packaging cartons and other products.

Intaglio printing

A direct printing process in which ink is transferred from recesses in the printing plate onto a polymer or paper substrate.

Magnetic stripe ink

A material used to produce magnetic stripes on magnetized tickets (e.g.: subway tickets), consisting of a resin-based vehicle soluble in organic solvents compatible with the depth of the printing cylinder (rotogravure), containing dispersed inorganic pigments of brown-colored magnetic iron oxide. This material is printed on tickets to create a magnetic code with information about the product.

Biometric information

Biological traits, such as iris patterns or fingerprints, provided for personal identification, access control, etc.

Pad printing machines

An indirect process of gravure printing on materials of different sizes and surface textures, which consists of transferring ink from the cliché via a pad onto the substrate.

Watermark

A pattern imprinted in security paper by a mold directly during the manufacture of the paper. A watermark is translucent when seen against light, producing a greyscale image.

Offset

An indirect printing process in which the inked image is transferred from a flat or cylindrical printing plate to a rubber blanket then to the paper or plastic substrate. The offset printing process can be "dry" or "wet" depending on the type of printing plate. In dry offset printing, the printing plate has photopolymer layers of varying height and the ink is located on top of the printing relief. In wet offset printing, the printing plate has no relief and a wet solution (water) is used. Blank areas are produced by removing ink around the print pattern, which is then transferred to the paper or plastic substrate.

Digital revenue stamps

Products used by the Federal Tax Authority for control over manufactured products, tax collection, distribution control and as a deterrent against counterfeiting. They differ from physical stamps in that they incorporate a digital stamp printed as characters or a QR code directly on the product being marketed, which is then controlled and tracked via a digital system comprising dedicated applications, networks and servers.

Flexographic varnish

A nearly transparent finishing film with no pigments, used for protection on security documents. It is applied in liquid form through a printing process using a flexographic printing plate with a polymer surface.

- ▶ **Project Management:** Environment and Quality Department, Brazilian Mint
- ▶ **GRI consulting, writing, editing and design:** Report Sustentabilidade (www.reportsustentabilidade.com.br)
- ▶ **Photos:** Brazilian Mint Archives (except where otherwise specified in credits)
- ▶ **Casa da Moeda do Brasil**
Rua René Bitencourt, 371, Santa Cruz, Rio de Janeiro - RJ. CEP: 23565-902
Phone: (21) 3622-2299 - Fax : (21) 3622-2257



CASA DA MOEDA
DO BRASIL