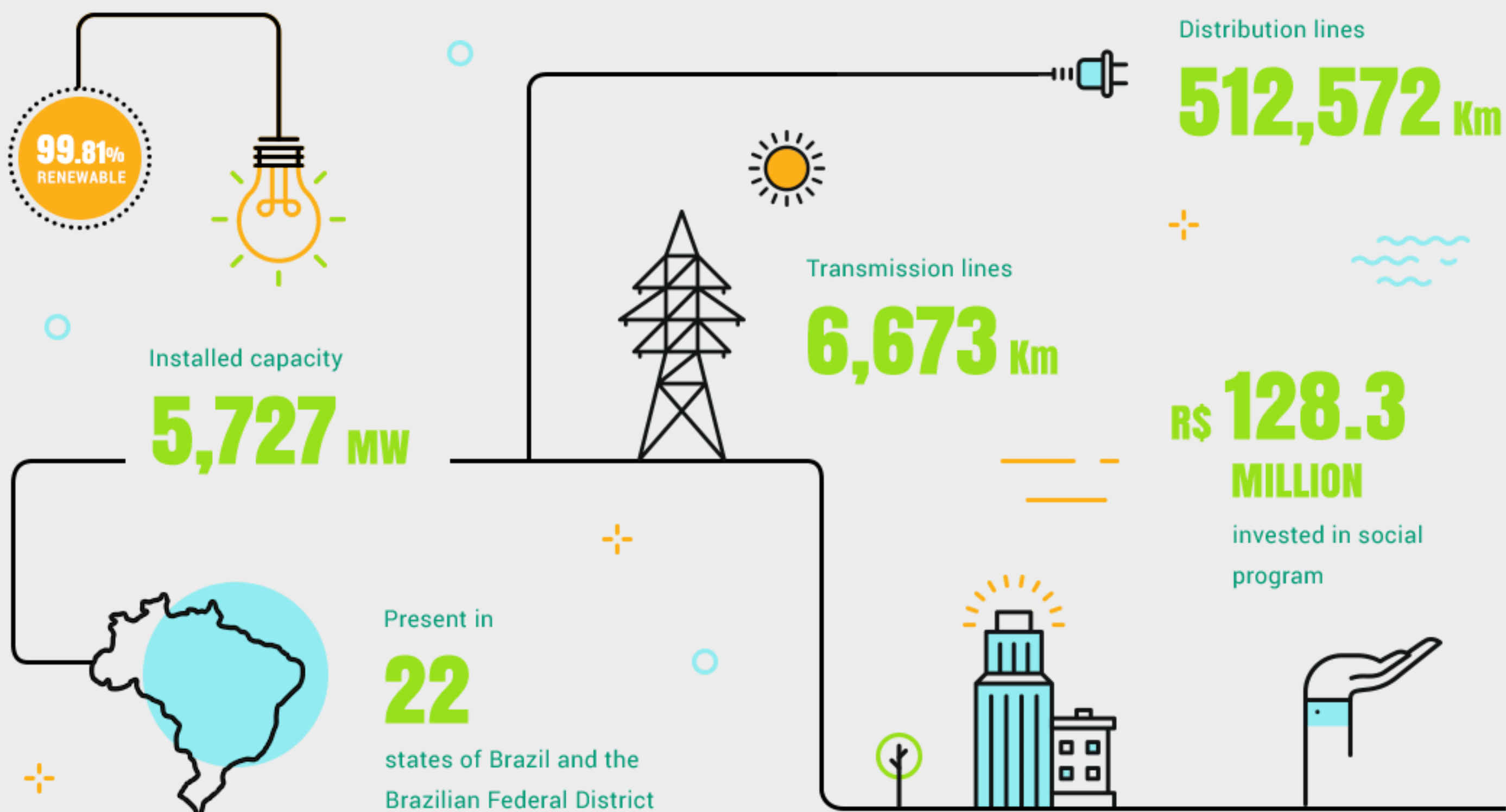




# 2017

ANNUAL AND SUSTAINABILITY REPORT

# MAIN INDICATORS



Financial data ('Economic dimension') are in R\$, consolidated, and expressed under IFRS (International Financial Reporting Standards). The other figures are totals for the holding company, Companhia Energética de Minas Gerais S.A. ('Cemig'), and its wholly-owned subsidiaries Cemig Distribuição S.A. ('Cemig D') and Cemig Geração e Transmissão S.A. ('Cemig GT'), in accordance with Global Reporting Initiative (GRI) method. <sup>1</sup>

Scale, performance, capacity		2013	2014	2015	2016	2017
Number of consumers (thousands) <sup>2</sup>		7,781	8,008	8,078	8,260	8,339
Number of employees (G4-10)		7,922	7,922	7,860	7,119	5,864
Municipalities served		774	774	774	774	774
Concession area (km²) <sup>3</sup>		567,478	567,478	567,478	567,478	567,478
SAIFI – average outage frequency (EU28)		6	6	6	6	5
SAIDI – average outage duration (EU29)		12.49	10.57	11.53	11.73	10.83
Number of plants in operation <sup>4</sup>		70	70	84	121	117
Installed capacity, MW (EU1) <sup>5</sup>		7,038	7,717	7,800	8,201	5,727
Total length of transmission lines – km (EU4) <sup>5</sup>		9,748	9,748	9,748	8,341	6,673
Total length of subtransmission lines – km (EU4)		17,218	16,160	16,160	16,442	17,301
Total length of distribution network – km (EU4)	Total	486,045	491,848	494,550	498,627	512,572
	Urban	98,175	99,818	101,454	102,301	107,099
	Rural	387,870	392,030	363,096	396,326	405,473



	Year				
Economic dimension	2013	2014	2015	2016	2017
Net operational revenue, R\$ mn	14,627	19,540	21,292	18,773	21,272
Ebitda – R\$ mn	5,186	6,382	4,955	2,638	3,492
Net profit (loss) – R\$ mn	3,104	3,137	2,492	334	1,001
Stockholders’ equity – R\$ mn	12,638	11,285	12,995	12,930	14,330
Market valuation – R\$ mn	17,629	16,812	7,843	9,773	8,455
Dividends paid – R\$ mn <sup>6</sup>	2,818	797	633	380	540

	Year				
Environmental dimension	2013	2014	2015	2016	2017
Funds applied in the environment – R\$ mn (EN31) <sup>7</sup>	52.40	52.80	53.90	52.10	37.50
Fuel consumption – vehicle fleet (in GJ) <sup>8</sup>	174,519	172,270	162,067	160,084	153,661
Installed capacity free of GHG emissions (%)	97.30	97.30	98.10	98.20	98.20
Total water consumption – m³ (EN8) <sup>9</sup>	1,313,486	1,424,540	164,537	371,782	363,756
Direct CO <sub>2</sub> emissions – metric tons (EN15)	146,101	617,717	698,049	15,462	48,849
R&D investment related to environment (R\$ mn)	10.00	11.70	8.50	2.90	1.10

	Year				
Social dimension	2013	2014	2015	2016	2017
Average hours of training per employee (LA9)	69.60	49.37	37.26	20.56	35.52
Total funds applied in social responsibility – R\$ mn <sup>10</sup>	83,234	109,622	75,751	57,640	128.227
Accident frequency rate – own employees (LA6) <sup>11</sup>	1.70	1.70	2.04	1.70	2.00
Accident frequency rate – outsourced employees (LA6) <sup>11</sup>	2.24	2.14	2.74	1.84	1.20

G4-9	G4-22	G4-23	EU1	EU4
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<sup>1</sup> For more on the GRI methodology see: [www.globalreporting.org](http://www.globalreporting.org)

<sup>2</sup> Numbers of consumers by category are given in the item Cemig's electricity market.

<sup>3</sup> Distribution concession area of Cemig D.

<sup>4</sup> Figures for Cemig.

<sup>5</sup> Figures for Cemig Consolidated – including interests in subsidiaries/affiliates proportionally, with prior years adjusted to new reporting criteria.

<sup>6</sup> Dividend for 2017 to be proposed to the AGM of April 30, 2018.

<sup>7</sup> Sum of funds allocated to the environment in Operation and Maintenance.

<sup>8</sup> Amounts for fuel consumption in 2013–2015 have been recalculated to include Cemig's fleet of waterborne vessels and aircraft as well as the vehicle fleet.

<sup>9</sup> Total water consumed for administrative and industrial purposes.

<sup>10</sup> Sum of funds reported under External and Internal Social indicators – see these in detail in the Social Statement. Errata: In 2016 the value reported in the table was different from that inserted in the chapter of Social Investment. The amount was corrected in the table to be published in the 2017 report.

<sup>11</sup> Number of accidents resulting in injuries. The entire historical series, including data for 2017, has been recalculated, in accordance with the Brazilian Standard ABNT NBR 14.280. In previous reports, these data were calculated according to the US200,000 criterion.



Substation of Cemig.

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# MESSAGE FROM MANAGEMENT

G4-1 G4-39

In our message to you last year, we highlighted the challenges and difficulties of the macroeconomic environment, and that Cemig, in particular, had to deal with an electricity market that was still retracted, and with financial costs for rolling over of our debt that were still very high as a result of the higher risk perception in relation to Brazil.

With 2017 now completed, we believe we have good news for our stockholders, and for the public, of the important progress achieved in the year.

Starting with management of debt: We previously had approximately R\$ 8.7 billion of debt maturing in 2017 and 2018. After more than 20 years absent from the international financial market, we raised funds outside Brazil, through Cemig GT, of US\$ 1 billion (R\$ 3.2 billion) in bonds, maturing in 2024. Also, we carried out a re-profiling of our debt, for a total amount of R\$ 3.4 billion. Together these two initiatives have balanced our cash flow, extended average debt maturities, and improved our credit quality.

Additionally, to improve our liquidity and reduce debt in 2017 we announced our disinvestment program, with priority for disposal of the assets that were most liquid, or which would bring us limited return in the short term, or which are not strategic. In spite of the difficulties and complexities inherent in the process of disposal, we are confident that the actions we have taken will produce positive results in 2018, which will enable us to reduce the Company’s leverage more accentuatedly, and faster.

This, associated with the reduction of our commercial losses and operational costs, points to a significant increase in the cash flow of Cemig D as from 2018, marking a new chapter in the history of this subsidiary.

We also do not forget the quality of service to our clients. We maintain our continuous process of improvement of our quality indicators, as measured by duration and average time of outages (the SAIDI and SAIFI indicators), in accordance with the requirements of regulation, which have been improving over recent years.



We continue our quest for improvement of operational efficiency. We implemented a new voluntary dismissal program, which was joined in 2017 by 1,151 employees. We feel confident that this will have positive effects in the coming years in reduction of the Company’s operational expenses. Also important is the reduction of default, as a result of our actions during the year. These initiatives are added to others that contribute to the effort for reduction of the Company’s operational costs, which are already showing results.

Our net profit was R\$ 1 billion, or 200.00% more than in 2016 (R\$ 334 million). Our cash flow, measured as Ebitda, was 39.65% higher in 2017, at R\$ 3,492 million, than in 2016 (R\$ 2,638 million). We are firmly confident that the improvement in our profitability and cash flow represent a trend for the coming years, as a result of our actions in the present.

In this context of improvement of our profitability, a highlight is the tariff review for Cemig D (Distribution), to be concluded in May 2018, with the inclusion of remuneration of the investments that we have made since 2013 in the concession, of more than R\$ 5 billion.

In the transmission business, the decision on rules for indemnity of the assets, in the previous year, has ensured we have a stable flow of cash for the coming years, making it possible to approve a multi-annual program of investments for Cemig GT, of R\$ 1.1 billion, which will make addition of new revenues from these investments possible, in the future.

In our generation business, a highlight is the indemnity of more than R\$ 1 billion now agreed for the basic plans of the São Simão and Miranda plants. We are in discussion with the federal government on the criteria for measurement of this indemnity in the quest for a fair indemnity for the investments made by the Company.

As well as all the action we have taken (above) to add value for Cemig, the macroeconomic expectation for 2018 – higher GDP growth and lower interest rates – has a positive effect for the Company, translating into lower default, lower financial costs of debt, and improvement in the energy market.

We continue to be recognized for the sustainability and social responsibility that are ever-present in our operations. We were once again included in the São Paulo Stock Exchange Corporate Sustainability Index, and in the Dow Jones Sustainability Index, in which we have been included since its creation in 1999. We are signatories of the UN Global Compact; and we have leading positions in several international and Brazilian sustainability ratings – all of these indices representing recognition of the value of our shares from the point of view of sustainability.

Concluding, we are optimistic for the future: that with our management capacity, and the competence and commitment of our employees, we will build a positive story for Cemig over the coming years, with appropriate and sustainable return on investments, rewarding the trust placed in us by our stockholders – in dozens of countries, on all the continents.

We would like to express our thanks for the commitment and talent of our employees, which with the support of our stockholders and other stakeholders help to uphold the recognition of Cemig as: *Brazil’s Best Energy*.

Board of Directors*	
Sitting members	Substitute members
Adézio de Almeida Lima - Presidente (Majoritary)	Nelson José Hubner Moreira (Majoritary)
Marco Antônio Soares da Cunha Castello Branco - Vice Presidente (Majoritary)	Hermes Jorge Chipp (Majoritary)
Antônio Carlos de Andrada Tovar (Majoritary)	Agostinho Faria Cardoso (Majoritary)
Bernardo Afonso Salomão de Alvarenga (Majoritary)	Seat Vacant (Majoritary)
Luiz Guilherme Piva (Majoritary)	Seat Vacant (Majoritary)
Marco Aurélio Crocco Afonso (Majoritary)	Seat Vacant (Majoritary)
Marcelo Gasparino da Silva (Preferred shares)	Aloísio Macário Ferreira de Souza (Preferred shares)
José Pais Rangel (Minority)	José João Abdalla Filho (Minority)
Daniel Alves Ferreira (Minority)	Manoel Eduardo Lima Lopes (Minority)
Patrícia Gracindo Marques de Assis Bentes (Minority)	Seat Vacant (Minority)

\* Subsequent event - New Board of Directors members for the 2018/2020 term, elected by the Board Meeting of may/02/2018

The Audit Board*	
Sitting members	Substitute members
Ricardo Wagner Righi de Toledo (Majority)	Seat Vacant (Majority)
Geber Soares de Oliveira (Majority)	Seat Vacant (Majority)
Alcione Maria Martins Comonian (Majority)	Seat Vacant (Majority)
Rodrigo de Mesquita Pereira (Preferred shares)	Michele da Silva Gonsales (Preferred shares)
Manuel Jeremias Leite Caldas (Minority)	Ronaldo Dias (Minority)

\* Subsequent event - New Audit Board members for the 2018/2020 term, elected by the Board Meeting of may/02/2018

Executive Board*	
Name	Position
Bernardo Afonso Salomão de Alvarenga,	Chief Executive Officer
Bernardo Afonso Salomão de Alvarenga	Deputy CEO (interim)
Daniel Faria Costa	Chief Business Development Officer
José de Araújo Lins Neto	Chief Corporate Management Officer
Maura Galuppo Botelho Martins	Chief Officer for Human Relations and Resources
Ronaldo Gomes de Abreu	Interim Chief Distribution and Sales Officer
Dimas Costa	Chief Trading Officer
Maurício Fernandes Leonardo Jún	Chief Finance and Investor Relations Officer
<a href="#">Franklin Moreira Gonçalves</a>	Chief Generation and Transmission Officer
Thiago de Azevedo Camargo	Chief Institutional Relations and Communication Officer
<a href="#">Luciano de Araújo Ferraz</a>	Chief Counsel

\* Except by Daniel Faria Costa and Maurício Fernandes Leonardo Júnior who were elected by the first time, the members of the Executive Board were reappointed, all for a three years term, that is, until the Ordinary General Assembly to be held in 2021.





Mario Pinto, technician of operation during the accomplishment of maneuvers in the control room of the Itutinga Hydroelectric Power Plant. In the background, Wanderson, operator. Itutinga-MG, Brazil.

# CEMIG

## RECOGNITION





# Participation in associations<sup>1</sup>

G4-16SDG17

Cemig is a participating member of the following associations: the Brazilian Electricity Distributors’ Association – Abradee; the Brazilian Association of Large-scale Generators – Abrage; the Brazilian Association of Independent Electric Power Producers – Apine; the Brazilian Clean Energy Generation Association – Abragel; the Brazilian Power Transmission Companies’ Association – Abrate; the Brazilian Association of Thermoelectric Generators – Abraget; the Brazilian Power Traders’ Association – Abraceel; The Brazilian Technical Standards Association – ABNT; the Brazilian Corporate Council for Sustainable Development – Cebds; the Electricity Research Center – Cepel; and the Minas Gerais State Industries’ Association – Fiemg.

<sup>1</sup> For further information about Cemig participation in the Associations related to the energy sector, please check our [website](#).

## Profile

G4-3G4-4G4-6G4-14

Companhia Energética de Minas Gerais (Cemig) operates in generation, transmission, sale and distribution of electricity, energy solutions (Efficientia S.A.), and distribution of natural gas (Gasmig). The Cemig Group comprises: the holding company (Companhia Energética de Minas Gerais – Cemig), its wholly-owned subsidiaries Cemig Geração e Transmissão S.A. (‘Cemig GT’) and Cemig Distribuição S.A. (‘Cemig D’) – and other interests, comprising a total of 175 companies, 15 consortia and 2 FIPs (Equity Investment Funds), resulting in assets in 22 Brazilian states, and the nation’s capital, the Federal District.

For more information on Cemig’s interests and businesses please see:  
[http://cemig.foinvest.com.br/ptb/7900/Organograma\\_31\\_12\\_2017\\_port.pdf](http://cemig.foinvest.com.br/ptb/7900/Organograma_31_12_2017_port.pdf)

Cemig also has operations in data transmission (CemigTelecom); and interests in Light S.A. where it is part of the controlling stockholding group through a direct holding of 26.06% and an indirect interest of 22.80%. Light is the power distributor in 31 cities/counties in the state of Rio de Janeiro, with 11 million consumers. Cemig also has a controlling stockholding interest of 36.79% in the transmission company Transmissora Aliança de Energia Elétrica S.A. – Taesa.

## Principal equity interests

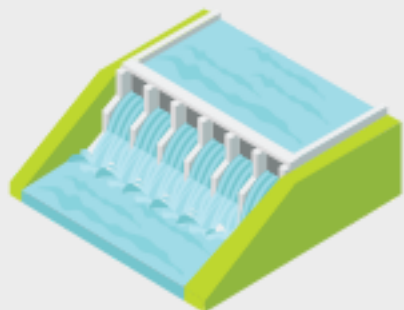
Below we list the Cemig Holding Company’s main equity interests in subsidiaries and affiliated companies\*. The disinvestment plan, which has changed Cemig’s equity interests, is detailed in the chapter Investments in G, T and D (disinvestment program):



Generation	Transmission	Distribution	Gas	Other businesses
Cemig Geração e Transmissão S.A.	Cemig Geração e Transmissão S.A.	Cemig Distribuição S.A.	Cia de Gás de Minas Gerais	Axxiom Soluções Tecnológicas S.A.
(Cemig GT)	(Cemig GT)	(Cemig D)	(Gasmig)	-
Cemig owns: 100%	Cemig owns: 100%	Cemig owns: 100%	Cemig owns: 98.71% of voting stock 99.57% of total stock	Cemig owns: 73.92%
-	-	-	www.gasmig.com.br	www.axxiom.com.br
Light S.A.	Transmissora Aliança de Energia Elétrica S.A. (Taesa)	Light S.A.	Natural gas exploration blocks	Efficientia S.A.
Cemig interest: 48.86%	Cemig owns: 36.97% of voting stock 21.86% of total stock	Cemig owns: 48.86%	Direct interest 24.5%	Cemig owns: 100%
www.light.com.br	<a href="http://www.taesa.com.br">www.taesa.com.br</a>	www.light.com.br	-	www.efficientia.com.br
Norte Energia S.A.	-	-	-	Cemig Telecom S.A.
(Belo Monte Hydroelectric Plant)				-
Cemig interest: 12.91%				Cemig owns: 99.99%
www.norteenergia.com.br				www.cemigtelecom.com.br
Santo Antônio S.A.	-	-	-	-
(Santo Antônio Hydroelectric Plant)				
18.13% Cemig				
www.santoantonioenergia.com.br				
Renova Energia S.A.	-	-	-	-
Cemig interest: 44.62%				
www.renovaenergia.com.br				

\* CV: capital votante CT: capital total


## MAIN BUSINESS SEGMENTS



**GENERATION**

CAPACITY INSTALLED:


**5,727 MW**



**TRANSMISSION**

EXTENSION OF LINES:

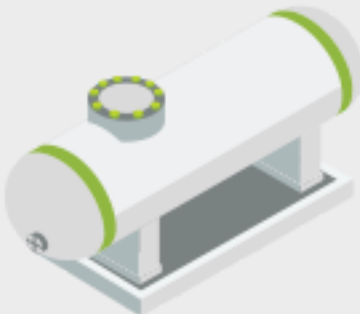
**6,673 Km**



**DISTRIBUTION**

EXTENSION OF NETWORKS:

**512,572 Km**



**NATURAL GAS**

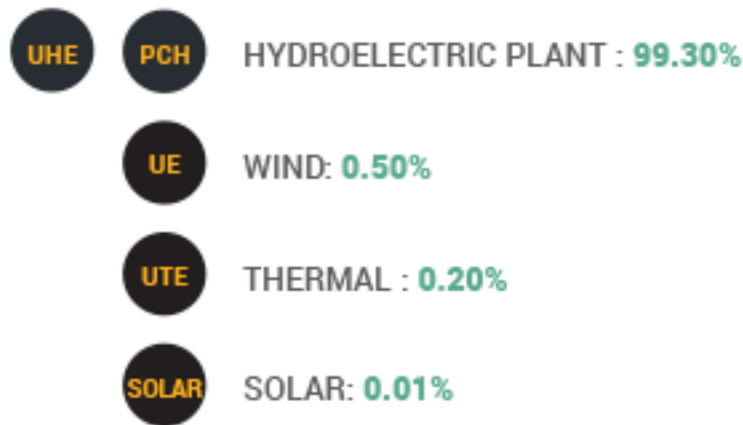
**1,3 BILLION m³**

OF NATURAL GAS SOLD IN 2017

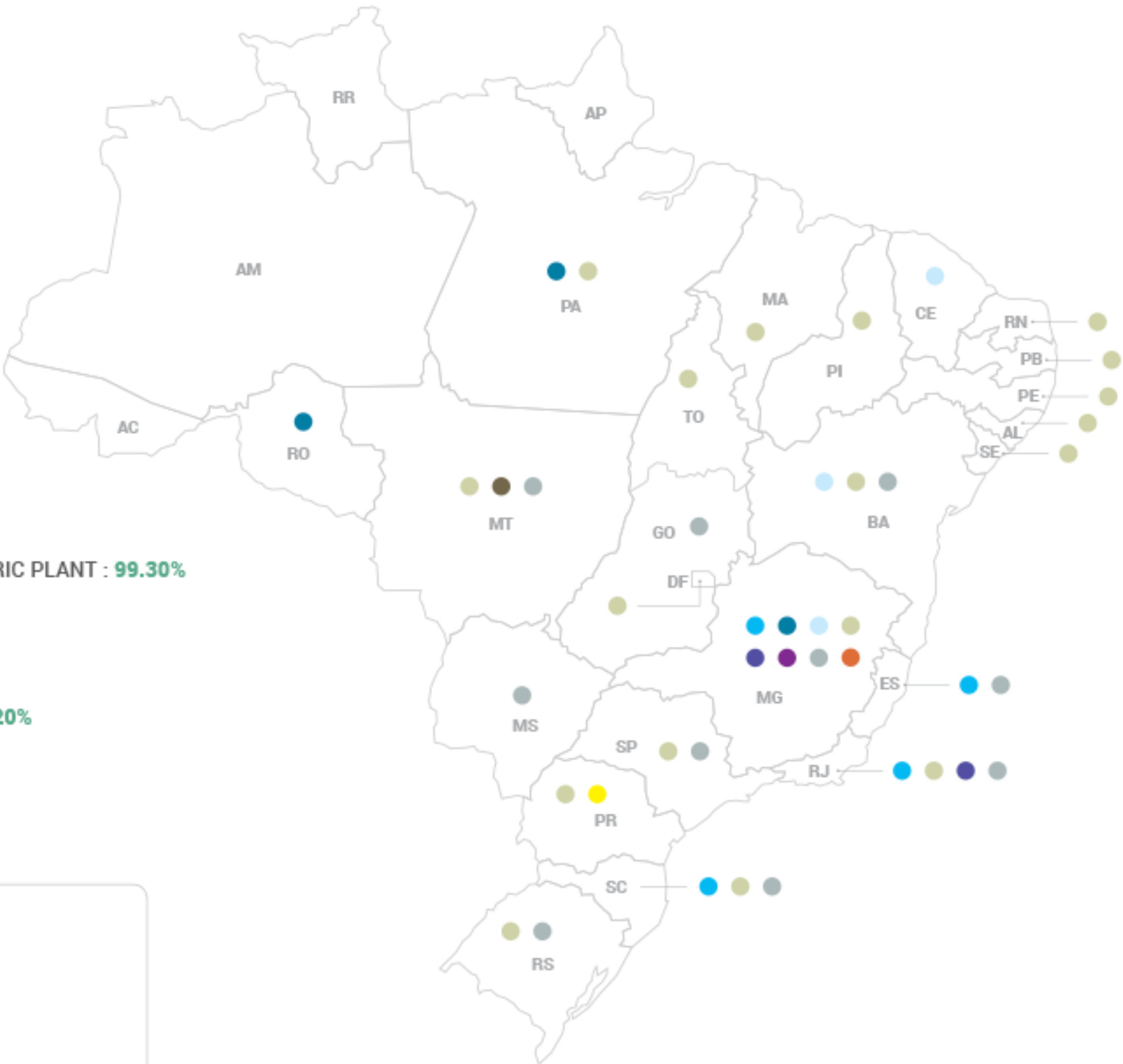
\* CEMIG’S CONSOLIDATED NUMBERS, INCLUDING PROPORTIONAL SHARES IN CONTROLLED / AFFILIATED COMPANIES.

# WHERE WE ARE

## ENERGY MATRIX AND INSTALLED CAPACITY



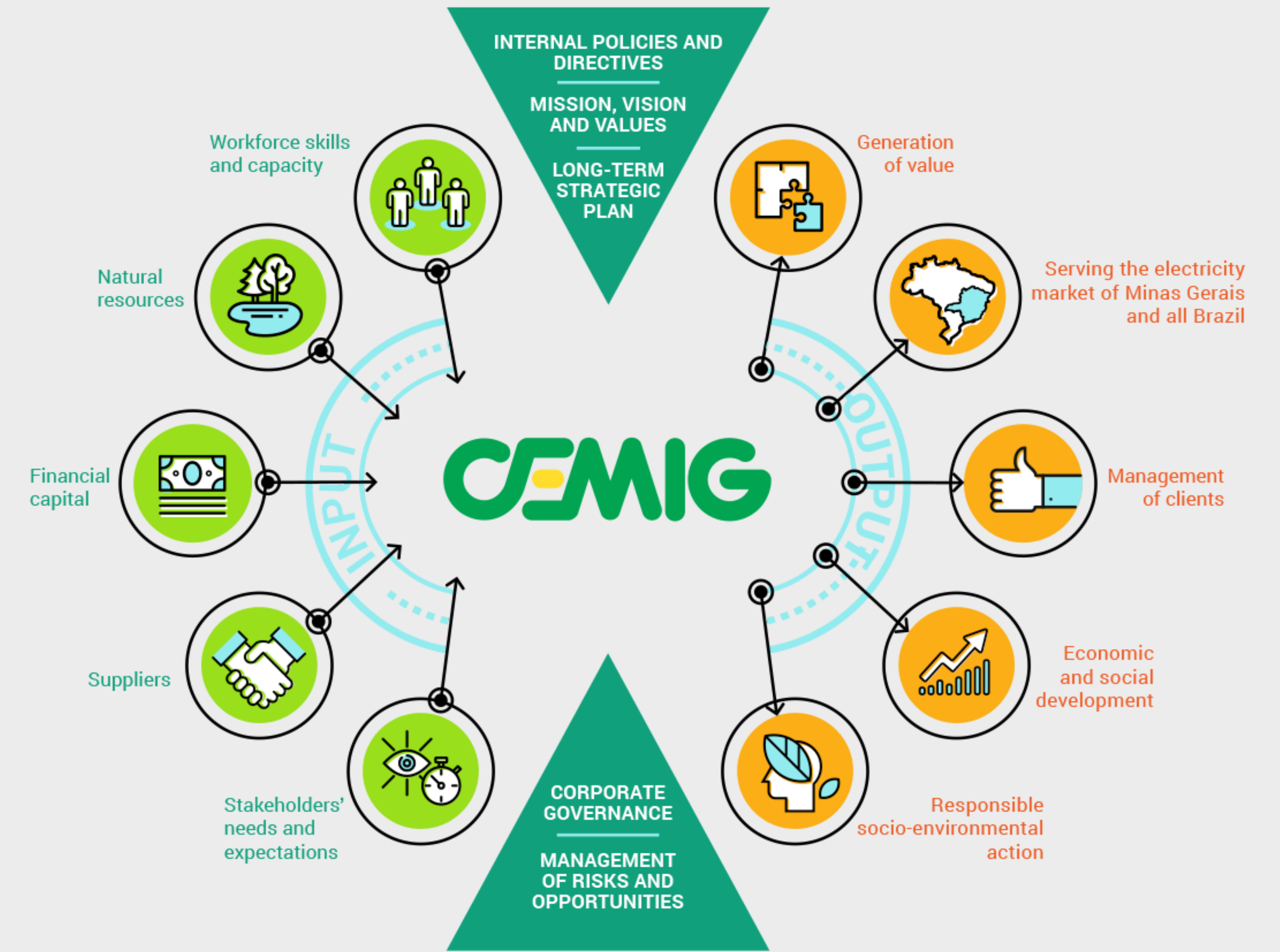
CLEAN ENERGY  
**99.81%**  
OF THE ENERGY MATRIX



Cemig’s outstanding assets are: the technical capacity and quality of its workforce, recognized for its expertise both in Brazil and internationally; its natural resources, mainly water resources (99.30% of its installed generation capacity is hydroelectric); the capital necessary for development of the business; the inputs provided by its suppliers; and the consideration that it gives to the needs and expectations of its stakeholders.

In all its activities Cemig seeks to create value for its shareholders, employees, suppliers and society. The investments in expansion of power distribution, and the commitment to quality customer service, are the materialization of Cemig’s strategic vision, which is founded on the principles of sustainability and social and environmental responsibility.

# BUSINESS MODEL





# VISION, MISSION AND VALUES

Cemig’s management is based on the guidelines expressed in the Mission, Vision and Values set out in its Long-Term Strategic Plan, and in its Strategic Planning.

Cemig’s **Mission** is: “To operate in the energy sector with profitability, quality and social responsibility.”

Its **Vision** is: “To consolidate Cemig’s position, over the course of this decade, as the largest group in the Brazilian electricity sector by market value, with a presence in the gas market, and as a global leader in sustainability, admired by its clients and recognized for its solidity and performance.”

Cemig’s **Values** are: Integrity; Ethics; Wealth; Social Responsibility; Enthusiasm at Work; and Entrepreneurial Spirit. These qualities nurture, inspire and sustain the beliefs and attitudes that give personality to the relationship between Cemig and people.

# ETHICS AND TRANSPARENCY

## DMA

G4-56	G4-57	G4-58	HR2	S03	S04	S05	S06	GC10	SDG16
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Cemig is committed to maintaining a high standard of ethics and integrity in the conduct of its business. This is evident in the values and ethical principles assumed by the Company in its Statement of Ethical Principles and Code of Professional Conduct. These are summarized below.

## Values and Ethical Principles



Themes such as Transparency, Ethics, Integrity, Compliance and Action against corruption permeate the Company’s culture by means of documented policies, procedures, communication campaigns and periodic training. Documents that formalize Cemig’s policies and procedures include: the Statement of Ethical Principles and Code of Professional Conduct, the Anti-fraud Policy, the Corporate Risk Management Policy, the Information Security Policy, the remit of the Ethics Committee, the anonymous ‘Whistleblowers’ Channel’, and the penalties for non-compliance with internal and external rules. Cemig also periodically holds internal updating campaigns to sustain employees’ and outsourced workers’ awareness about the Code of Conduct, and about prevention of fraud and corruption.

Cemig’s Compliance Program aims to promote an organizational culture that encourages ethical conduct, commitment to compliance with internal and external rules and standards, and prevention and detection of, and response to, failures to comply with these rules – deviations from proper conduct. The Board of Directors approved the program in November 2016. It expresses the Company’s purpose of ensuring appropriate access to all the information published by Cemig, with transparent and clear treatment of all the subjects of interest to the general public and investors, ensuring precision and quality in information provided.

To orient correct conduct by all employees in execution and management of internal processes, Cemig keeps a group of clear rules and procedures available on its intranet, and to disseminate them provides internal training, and publication on internal channels.

Cemig revised its Anti-fraud Policy in 2017, making fully explicit the prohibition on donations of any type, direct or indirect, of money or of goods or services with monetary value, or goods or services, including publicity or advertising, that may tend to favor any political party or its members, active or not. The Policy applies to Cemig, its wholly-owned subsidiaries, and all companies in which it has control. It is aligned to the requirements of Federal Law 9504/1997 – the ‘Elections Law’. Item 5 of Cemig’s Sponsorship Policy – NO-02.16 (E-13-019) – excludes from sponsorship any project that has any party political appeal or content, or any sectarian religious appeal, or which are contrary to any federal, state or municipal law, have content that violates human rights or has a basis in discrimination, harms or threatens nature or preservation of the environment, or has merely commercial purposes. This item also formalizes the guidelines for support to social institutions and investments in culture and sport through sponsorships and use of federal physical incentive mechanisms. The Policy is part of the Company’s group of practices in communication and social management, reiterating its commitment to transparency as key in any sponsorship, philanthropy, support or partnerships.

The Company gives all new employees a lecture-presentation on its corporate culture, including the various subjects of organizational ethics, to make everyone familiar with them from the first day.

Cemig also has a “Whistleblowers’ Channel” (for anonymous reporting), an Ombudsman, and an Ethics Committee. They deal with reporting and treatment of any irregularities, or ethical dilemmas, affecting operations. Other routes include the committee’s email, physical address for letters, and an exclusive phone line.

These preserve 100% anonymity. Among other situations it can be used to report discrimination. In 2017 Cemig received 225 reports, of a wide range of types of situation, through the four routes. All were sent for investigation. After completion, the responses are made available to the reporting or complaining parties.

Reports via the anonymous channel	Concluded	In progress	Total
Commercial relationship	4	2	6
Health and safety	5	2	7
Corporate infrastructure	3	5	8
Movement of material	6	14	20
Others	22	4	26
Management of people	3	4	7
Suppliers	10	30	40
Inappropriate conduct	46	39	85
Human rights	-	1	1
Equality of opportunity	17	6	23
Gender equality	-	2	2
Total	116	109	225

36 disciplinary measures and penalties were imposed in the year for noncompliance with the Code: 18 warnings, 12 suspensions and 6 dismissals took place.

Cemig has an Annual Internal Audit Plan for assessing the main corporate procedures, which aims to ensure that procedures continue to be fit for purpose, and that there is compliance with all laws, rules, standards and internal procedures. Decisions on which processes and companies will be audited in a year are based on the degree of risk that they represent for the business and for Cemig’s financial statements. Priority is given to procedures with higher risk, which are audited more frequently than those judged to be of lower risk. The risks assessed include the risk of fraud – which was assessed in 2015 and 2016, and since no significant changes to the Company have happened since them, it is understood that these assessments remain valid for 2017. Risk factors are reviewed during the audit planning process, to identify any changes in processes, or new events that might bring elements of uncertainty to the business.

Cemig has an internal control system to prevent fraud and corruption, aligned with the requirements of the Sarbanes-Oxley Act (SOX), and the Foreign Corrupt Practices Act (FCPA), of the USA. Key control activities audited annually are: orientation against unethical practices, corruption and fraud (the Anti-Fraud Policy); the anonymous ‘Whistleblower’s Channel’; the Human Resources’ policies on recruitment and remuneration; the corporate risk management process; information security procedures; segregation of duties performed manually and those performed by computer systems; limits of autonomy; and the internal control system that monitors activities conducted by the Internal Auditing unit.

In December 2017 Cemig made a new training course available to all employees and outsourced workers: “GRC – Governance, Risks and Compliance: an overview”. The material explains Cemig’s governance structure, the bodies comprising it, their importance and functions, and aims to show how risk management works – what are the risks, their effects and probabilities, and how it is possible to foresee, and often avoid, the creation of future losses for the Company. Risk challenges relating to fraud and corruption are mapped, documented and approved by Senior Management. The process (a) estimates probabilities of risks materializing, in accordance with their causes and the severity of the consequences if they occur, and (b) maps the internal controls and measures related to mitigation of each risk. This provides an opportunity to disseminate the concept of compliance, which is of great importance in dealing with subjects related to integrity and obedience to internal and external rules.

In 2017 Cemig began an internal communication campaign under the title GRC – Governance, Risks and Compliance in Focus. This package contains various communication and training tools, with a special channel to discuss these subjects with the Company’s leadership – ‘the GRC in Focus Leadership Channel’. This is updated monthly with articles, news, texts and videos aiming to give all Cemig management important content on the culture of integrity, compliance and risks. It is available to all senior and line managers, employees and outsourced workers.

Some highlights of 2017:

- i. The Corporate Risk Management and Compliance areas were reorganized to increase their integration and serve the Company’s strategic objectives more efficiently.
- ii. In 2017 Cemig joined the Corporate Pact for Integrity and Against Corruption, coordinated by the Ethos Institute. This is a group of guidelines and procedures for signatory companies to adopt in their relationships with public authorities.
- iii. Cemig has been improving its governance system to meet the requirements of [Law 13303 of 2016 – the ‘State Companies Law’, which sets rules for governance of companies under full or shared state control](#). Ways Cemig is adapting include (i) preparation of new internal regulations for bids and contracts, and (ii) creation of an audit committee.
- iv. The Board of Directors approved a new version of the Corporate Risks Management Policy in 2017 – showing the Board-level importance with which Cemig treats risk management, and Company’s alignment with good risk management and corporate governance.

Cemig has been working on permanent enhancement of our culture of ethics and integrity. Among other developments, six employees were dismissed for deviation of conduct in 2017.

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<sup>4</sup> The law has been in force since July 1, 2016, but gives 24 months for companies with full or shared public control formed prior to the law to adapt to it. This is also the period for adaptation to the new, more rigid rules for procurement and public bids; and appointment of chief officers, members of the Board of Directors and CEOs. State companies will also have, within ten years, to have 25% of their shares traded in the market.





Daniel Bahia Vieira, plant operator and Odilon Ferreira da Silva, maintenance mechanic at the Cajuru Hydroelectric Power Plant.

# ABOUT THIS REPORT

[G4-15](#) [G4-28](#) [G4-29](#) [G4-30](#) [G4-32](#) [G4-33](#)

## INTRODUCTION

This is Cemig’s Annual and Sustainability Report on the year 2017. It gives information on the performance of the Company’s operations as a whole, and principally, its actions to create and maintain value that constitute its strategic objectives, and aim to contribute to the Company’s sustainability. The report is published annually, and this edition covers the business year ended December 31, 2017. It is important as an instrument for dialogue with stakeholders – the publics that have an interest in Cemig’s activities and outcomes – and also for management, in providing a forum for all areas of the Company to present indicators and metrics, and comment on factors that influenced their performance in the year.

All accounting data in the report have been previously audited by ERNST & YOUNG Auditores Independentes S.A. for the annual financial statements – which are presented in accordance with International Financial Reporting Standards (IFRS), and are available on the Cemig’s website. As a further guarantee of quality and content of the data, Cemig’s Executive Board has commissioned an independent assessment, by the specialist company SGS do Brasil, with reasonable scope, of the report’s application of the principles and indicators of the Global Reporting Initiative (GRI).

If there has been any revision of the information that was presented in previous reports, for example due to reclassification or a change of methods of measurement, an explanation of any changes is given adjacent to the data.

This report on the year 2017 complies with the following requirements, which were also adopted in the prior version, on the year 2016:

1. Adoption of the GRI G4 methodology, a worldwide trend for production and disclosure of corporate report.
2. Publication of two versions of the Report: the ‘G4 Core’ report, and a Complete version. The G4 Core report is concise, focusing on indicators for the subjects that are most important for the Company and its stakeholders. The Complete version presents a wider group of indicators, as well as the specific GRI Sector Supplement for the Electricity Sector, and a report on progress in compliance with the 10 *Principles of the UN Global Compact*. Although it gives additional information, the ‘Complete’ version does not meet the criteria for being considered ‘Comprehensive’ according to the GRI G4 methodology. It does, however, ensure continuity of the data and indicators that were presented in previous reports.
3. or each one of the aspects identified in the materiality test, Cemig has provided, over the length of the report, the commentary known as *Disclosure on Management Approach* (DMA). Under the G4 methodology, this is required to include: an explanation of the importance of the issue to the Company; how the subject is managed; what risks are involved; and the related goals and objectives.



Additionally, the Company has tried, although partially, to follow the guidelines of the International Integrated Reporting Framework, published by the International Integrated Reporting Council (IIRC), which includes a description of the Company’s business model, and information on integration between programs and projects; and has indicated its initiatives that align with the UN Sustainable Development Goals (SDGs).

Both versions – the G4 Core and Complete – are available to read or download on Cemig’s website, including formats compatible with tablets and smartphones.

Questions on this report can be directed to Cemig’s Sustainability Management Unit ([sustentabilidade@cemig.com.br](mailto:sustentabilidade@cemig.com.br)) or to the Investor Relations Department ([ri@cemig.com.br](mailto:ri@cemig.com.br)).

## LIMITATIONS OF THE REPORT

G4-17	G4-18
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The accounting data in this report are for the group of companies in which the holding company, Cemig (Companhia Energética de Minas Gerais, or ‘the holding company’) has operational control, except where otherwise stated. The non-accounting data and information mainly refer to the holding company and the wholly-owned subsidiaries Cemig Distribuição S.A. (**‘Cemig D’**), Cemig Geração e Transmissão S.A. (**‘Cemig GT’**), Rosal Energia and Sá Carvalho, and and the wholly-owned subsidiaries of Cemig GT, Camargos, Itutinga, Salto Grande and Três Marias, and Leste Oeste and Sul hydroelectric plants, acquired through the auction of lot D (see more details in the sections Concessions and Investments). The accounting data is consolidated in accordance with Brazilian accounting law (for details see Note 3 of the Standardized Financial Statements (**‘DFP’**) on the Company’s website). The name **Cemig** is used to refer to the group of companies. The terms **Group** and **Company** are used as synonyms of ‘Cemig’ except where otherwise stated. The name Companhia Energética de Minas Gerais is used when referring, for example, to employees or transactions of the holding company alone, i.e. excluding the subsidiaries.

The scope of activities covered by this report is the same as for the report in 2016, and is the basis for the data in the Materiality Matrix.

## THE MATERIALITY MATRIX AND PARTICIPATION OF STAKEHOLDERS

G4-19	G4-20	G4-21	G4-24	G4-25	G4-26	G4-27
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The Materiality Test results from a procedure that Cemig revises every year. Its aim is to capture as deeply and widely as possible the expectations of stakeholders – the individuals and groups that come within the organization’s area of influence – and thus enable Cemig to identify the subjects that should be covered in communications with the various publics, while also serving as a guide for the Company’s management systems. The test was prepared and applied in July through November 2017, using various sources of consultation, including an event for meetings and consultation. The result is the principal framework of reference for construction of Cemig’s Annual and Sustainability Report for 2017.

Cemig identified some stakeholders for priority in relationship with the Company. Based on this ‘Stakeholder Mapping’, sources for consultation were sought corresponding to each of the groups, to arrive at the material subject areas. The process was permeated by the principles defining the report established in the GRI methodology.

The Materiality Test was applied, following the guidelines of the GRI G4 materiality principle, using a combination of input methods: external and its own internal data sources, including the Company’s strategic planning; research on stakeholder perception carried out during the year through corporate communications channels; sustainability rating agencies; news items published about Cemig and its sector; consideration of internal policies; media analysis; organizational values; results of the Company’s organizational atmosphere surveys; risks and opportunities; and internal perceptions collected through direct participation of employees in a group dynamics.

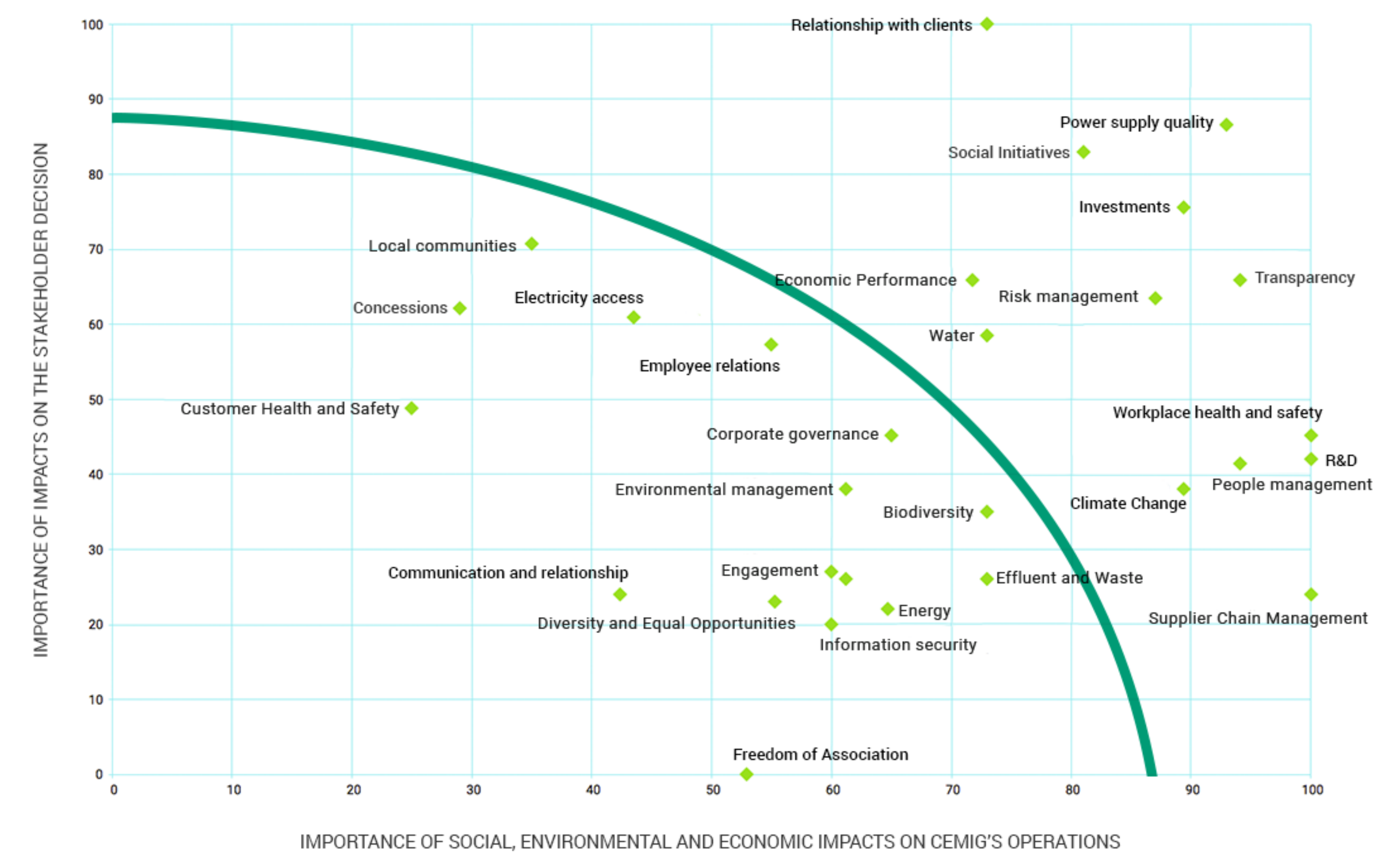
Teams from Cemig and Keyassociados were assigned to deal with the material and present a systematic assessment, critical analysis and groups for classification. The information on the communication channels used was not produced specifically to meet the demand of this methodology, but in accordance with the availability of stratifications previously adopted in the areas in which it was collected.

This procedure resulted in the Materiality Matrix shown below – indicating the 13 aspects that the study considered to be most material (on the right, and above the parabolic dividing line).

The report also addresses other aspects, but with less emphasis.



Materiality Matrix 2017























The process of developing the methodology applied in the Materiality Test, and its final result, were submitted to independent verification by SGS do Brasil.

The table below shows the material aspects identified by the sources representing stakeholders, according to the Materiality Matrix for 2017, and sources of information used to represent each stakeholder group.

STAKEHOLDERS								
ASPECTS	Investors	Community	Suppliers	Corporate clients	Consumers	Media	Employees	Government
Electricity quality					✓	✓		
Relationship with clients		✓	✓	✓	✓		✓	✓
Investments			✓	✓	✓	✓		
Social initiatives		✓	✓	✓	✓	✓		✓
Transparency	✓			✓	✓		✓	
Risk management	✓			✓		✓	✓	
Workplace health and safety		✓		✓	✓	✓		
Management of people				✓			✓	
Economic performance	✓			✓	✓		✓	
Climate change				✓			✓	
Water		✓		✓	✓		✓	
R&D					✓	✓		
Supplier chain				✓	✓			
SOURCES CONSULTED	Summary of the subjects dealt with through the 'Talk to IR' channel	Extract from 'Face to Face' reports, sustainability study, 2017	Interview with managers of the Area	Interview with manager of the Area	Customer service channels, Ombudsman's office, IASC survey, summary of the "Reputation and Brand" survey	Media 'clippings'	Employee dynamic interviews	IASC survey with City Halls

The main subjects – the ‘material aspects’ – dealt with in the report correspond to key areas indicated in the GRI, the Global Compact and the Sustainable Development Goals:

		Indicators		
Material aspects	Chapter / page	GRI	Global Compact	Sustainable Development Goals
Electricity quality	Electricity quality	EU28, EU29	-	 
Relationship with clients	Clients and consumers	PR5	-	
Investments	Investments	G4-13, EU6, EC7	-	 
Social initiatives	Social initiatives	-	-	   
Transparency	Ethics and transparency	G4-56, G4-57, G4-58, HR2, S03, S04, S05	GC10	
Risk management	Risk management	G4-2, G4-14, G4-45, G4-46, G4-47	-	
Workplace health and safety	Occupational safety, health and wellbeing	LA5, LA6	-	
Management of people	Management of people	G4-10, LA1, LA2, LA12, LA9, LA10, LA11	-	  
Economic performance	Financial results	G4-9, G4-17, EC1	-	
Climate change	Climate change	EC2, EN15, EN16, EN17, EN18, EN19, EN20, EN21, EN30	GC7	
Water	Water resources	EN9, EN26	-	
R&D	Technology and innovation	EU7, EU8, EC2, EC4	GC9	
Supplier chain	Suppliers	G4-12, HR4, HR5, HR6, EC9, LA14, EN32, EN33, HR11, LA15	GC5, GC6, GC10,	

## New stakeholder engagement matrix

In 2017, a group of employees from multiple areas of Cemig reassessed the strategy for engagement with stakeholders, resulting in choice of a specific group of concepts and practices in the relationship with stakeholders.

Cemig believes that well-chosen strategies for relations with stakeholders can create innumerable benefits for the business:

- Anticipation of important trends and issues
  - Strengthening of credibility and transparency
  - Creation of synergies
  - Indication of opportunities to improve businesses
- Help in obtaining the ‘social license to operate’
  - Help in improving the Company’s image and brand
  - Minimizing risks in the relationships with stakeholders
  - Increase of investors’ confidence

Based on this concept, the steps in the process of engagement were defined:

- Identification of the different stakeholder groups
  - Choice of those with highest priority
  - Acquisition of knowledge and understanding of their needs and expectations
  - Decision on relationship commitments to be made, and the staff involved
- Development of tools to assess and enhance the process
  - Dissemination of the lessons learned



The Engagement Matrix – below – resulted from allocation of high priority to specific stakeholders:



Cemig used its principal relationship channels to map the needs and expectations of each of these nine groups – and based on the information collected, reaffirmed the commitments assumed with these groups, and made the information available on the Cemig web portal.

Many of these commitments had already been assumed and expressed in formal published documents: examples are the Cemig Code of Ethics, the Cemig Human Resources Policy, Cemig’s Communication Policy, Cemig’s Community Relationship Communication Policy, the Cemig Sponsorships Policy, and the Cemig Sustainability Report.

Part of this work included training on appropriate relationships with the press. Among other subjects this includes: management of crisis events – how to handle and/or prevent them; relationship with the media; potential mistakes and successes; and social media. This training was divided into two parts – conceptual and practical. Some 50 company staff took part, including managers, general managers and members of the Executive Board.

Cemig’s main actions of engagement are listed in the chapter Relationship with the Community.

## REFERENCES TO THE CONTENT INDEX

The GRI Content Index, published at the end of this report, presents a summary of all the available information, organized and categorized in a summary form from the point of view of the GRI Indicators and the Principles of the UN Global Compact.

Throughout the text, tags highlight the related GRI indicators, DMA disclosures on key subjects, Principles of the Global Compact, and the 17 Sustainable Development Goals. This aims to facilitate the reader’s ability to associate and locate the corresponding indicators or principles.

## GLOSSARY

For a full understanding of the terms used, Cemig has created a glossary, at: <http://ri.cemig.com.br/static/enu/glossario.asp?idioma=enu>





Bernardo Afonso Salomão de Alvarenga, CEO of Cemig, visits Neves 1 substation. Also present Maura Galuppo Botelho Martins, Director of Relations and Human Resources, Franklin Moreira Gonçalves, Director of Generation and Transmission, and Ronaldo Gomes de Abreu, Director of Distribution and Trade.

# CORPORATE GOVERNANCE

DMA

## GOVERNANCE MODEL AND LEADING PRACTICES

G4-7

G4-34

G4-41

Cemig’s corporate governance model is based on principles of transparency, equity and accountability, focusing on clear definition of the roles and responsibilities of the Board of Directors and the Executive Board in creation, approval and execution of policies and guidelines for managing the business.

For Cemig, sustainable development means achieving balance between the economic, financial, environmental and social aspects of its work, with continual effort to enhance its relationship with stockholders, clients, employees, other immediate stakeholders – and society as a whole.

Some key elements of Cemig’s transparent and structured Corporate Governance:

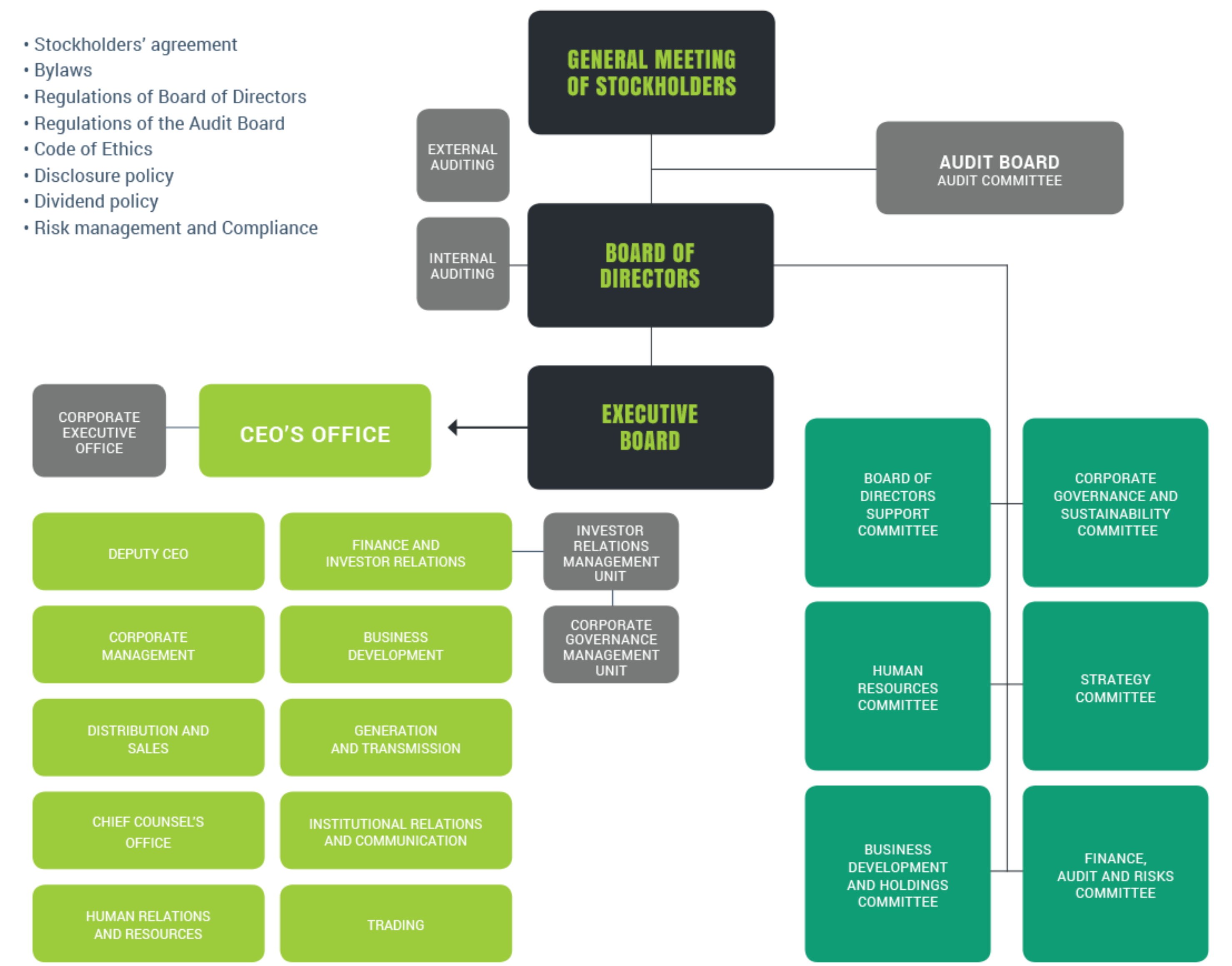
- Adherence to level 1 of Corporate Governance in B3 (Sao Paulo Stock Exchange)
- Corporate Governance and Sustainability Committee
- Level 2 ADRs on NYSE

Among the various actions to support a transparent and well-structured governance model, Cemig adopts the recommendations of the Corporate Governance Best Practices of the Brazilian Institute of Corporate Governance (IBGC), prioritizing a relationship of trust, integrity and respect for shareholders, investors, customers, employees, suppliers, society and Government.

There are more details of Cemig’s corporate governance model on its [Investor Relations](#) website.

The following figure illustrates Cemig's structure and main corporate governance arrangements.





In 2001, the company adhered to BM & FBovespa's Level 1 Corporate Governance practices, currently denominated "B3" (or in its stylized form [B]<sup>3</sup> ). To learn about Tier 1's main practices, visit the [B3](#) website.

Cemig is a listed Brazilian corporation with public and private sector stockholdings. The controlling stockholder, the State of Minas Gerais, holds 50.96% of the common (voting) shares. Brazil’s federal government owns 12.92% of the common stock, through BNDESPar (BNDES Participações S.A.), the equity investment arm of the Brazilian Development Bank (BNDES).

A Stockholders’ Agreement, signed in 2011, was unilaterally rescinded on September 7, 2017 by one of its signatories, AGC Energia, which also sold all of its interest during 2017.

Other practices of corporate governance:

- [Internal Regulations of the Board of Directors](#)
- [Internal Regulations of the Audit Board](#)
- [By-laws with distinctive structural requirements binding management](#)

Cemig’s [by-laws](#), contain a distinctive, pro-market dividend policy (see the Capital Markets section of this report), and also regulate key aspects of management of the business – they:

- require investments to be concentrated in the Company’s core business;
- set out obligations and autonomy limits for senior management;
- link those obligations to compliance with the Long-Term Strategic Plan; and
- establish borrowing limits, thus reducing any insolvency risk.

STOCKHOLDERS’ MEETINGS

As per the legislation, Cemig’s Annual General Meeting (AGM) is held each year, by the end of April. Extraordinary General Meetings of Stockholders (EGMs) may be held at any time. Convocations for both must be published 30 days in advance, through the CVM, on the Company’s Investor Relations website, and in newspapers with significant national circulation.

Dates of the meetings in 2017, a summary of their main decisions, and dates of meetings so far scheduled for 2018, are in Cemig’s [Corporate Events Calendar](#).

In 2017, the Annual General Meeting was held on May 12, and there were seven EGMs.

Comments, suggestions or recommendations to general meetings may be e-mailed to: [ri@cemig.com.br](mailto:ri@cemig.com.br), or submitted via the Cemig Investor Relations website.

## MANAGEMENT

G4-35	G4-40	G4-41	G4-51
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Management is by a Board of Directors, and an Executive Board. Cemig also has an Audit Board, appointed permanently (some Brazilian companies opt to call their Audit Boards to sit only occasionally). The Board of Directors is elected by the Annual General Meeting of Stockholders. Its members elect their Chair and Vice-Chair, and appoint the Executive Officers – the members of the Executive Board.

The Board of Directors has 15 members, and 15 substitute members, all elected by the stockholders, who have a range of complementary backgrounds and experience. Of the current sitting members, one by the stockholder José Pais Rangel, and one by José Pais Rangel jointly with the representative of Geração Futuro L. Par FIA (for the minority of the holders of voting shares), eight were nominated by the stockholder The State of Minas Gerais; two by AGC Energia S.A. and FIA Dinâmica Energia; two by BNDESPar; and one by the holders of the preferred shares,. Of the present sitting members four are considered to be ‘independent members’ by the criteria of the Brazilian Corporate Governance Institute ([IBGC](#)). All members of the Board of Directors and their substitute members serve for periods of office of two years, which may be renewed on expiration. The periods of office of the present members of the Board of Directors began on April 29, 2016, and expire at the Annual General Meeting of Stockholders to be held in April 2018.

In 2017 the Board of Directors met 36 times, deciding on issues including strategic planning and investment projects. At the start of each meeting, members are invited to indicate whether they have any conflict of interest in relation to the items on the agenda.

The Internal Regulations of the Board of Directors describe the composition, election, term of office, principal responsibilities and duties of the [Board of Directors](#)<sup>5</sup>.

Since 2006 the Board has had Committees of members, who review and discuss matters in advance of meetings. Each committee’s duties are shown on the [website](#). In the Corporate Governance and Sustainability Committee, senior management debates economic, environmental and social topics.

The Executive Board has 11 members, whose functions are specified in the by-laws. Its members are elected, for three-year terms, and may be removed at any time by the Board of Directors, or re-elected. They may simultaneously hold non-remunerated management positions in Cemig’s subsidiaries and/or affiliates. The period of office of the present Chief Officers expires at the first meeting of the Board of Directors held after the Annual General Meeting of 2018.

The Executive Board held 74 meetings in 2017.

Strategic Planning is conducted by the Board of Directors, with participation of the Executive Board, on the basis of the strategic fundamentals – the Mission, Future Vision, Values, Long-Term Strategic Plan, and Strategic Guidelines.

<sup>5</sup> There is no cross-membership between senior corporate bodies (e.g. no membership of other boards; no member of the Executive Board may be a member of the Board of Directors; etc.); and there is no significant crossover stockholding with suppliers or any other stakeholders.  
<sup>6</sup> Diversity is not yet currently a formal consideration in nominations to the Board of Directors or its committees.

Cemig’s Future Vision, stating the importance of the commitment to sustainability, is:  
“To consolidate Cemig’s position, over the course of this decade, as the largest group in the Brazilian electricity sector by market value, with a presence in the gas market, and as a global leader in sustainability, admired by its clients and recognized for its solidity and performance.”

A specific group of executives is responsible for corporate management of subjects related to sustainability. They:

- prospect and analyze trends in sustainability, through surveys and studies of best practices, in Brazil and worldwide;
- prepare strategy, based on sustainability trends and best practices;
- establish corporate guidelines; and
- act on themes that cut across business areas, permeating all senior management units.

Cemig has an Audit Board – a multidisciplinary entity, appointed permanently, and elected by the General Meeting of Stockholders, with five sitting members, each with a substitute member. As well as its standard oversight duties it examines all non-operational accusations passed to it by the Ethics Committee (which sorts complaints made through the ‘Whistleblower’s Channel’ on the Intranet, into operational and non-operational), and proposes action by the Internal Auditors.

It also acts as alternative to an Audit Committee, under the exemption in Rule 10-3A of the Exchange Act, regulated by Release 82-1234 of the US Securities and Exchange Commission.

The Audit Board held 16 meetings in 2017. Their period of office currently expires at the Annual General Meeting to be held in April 2018.

All details of the nomination and appointment of the members of the Board of Directors, Audit Board and Executive Board; the decisions on their remuneration; and the payment policy are all stated in the [minutes of the Annual General Meeting held on May 12, 2017](#).



# RISK MANAGEMENT - CORPORATE, SOCIAL AND ENVIRONMENTAL RISKS - AND OPPORTUNITIES

DMA

G4-14	G4-15	G4-45	G4-46	G4-47	SDG16
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Management of corporate risks enriches the dialog in management, adding points of view on strong and weak points of a strategy when context changes. It also assesses a strategy’s degree of alignment with the organization’s mission and vision. Following a reorganization of Cemig’s Corporate Risk Management and Compliance areas in 2017, these two areas and Strategic Planning are now jointly subordinated to the Strategy, Risks and Compliance Planning and Management Unit, working directly with the CEO’s Office.

The *Committee of Sponsoring Organizations of the Treadway Commission* (COSO), which is a worldwide point of reference, highlights the importance of considering the risk element associated with strategy, at the time of both decision and implementation.

The Corporate Risks Monitoring Committee (CMRC) is an important component, with three main tasks:

- To recommend guidelines and procedures for monitoring corporate risk, for continuous enhancement of effectiveness of processes – for approval by the Executive Board.
- Continuous monitoring of the business and other environments, vis-à-vis the risk matrix, to identify main risks and recommend priority mitigating action to the Executive Board.
- To monitor the structure of internal controls, and propose action to minimize events that might prevent achievement of the Company’s strategic objectives.

Approximation of risk with strategy enables the Company to see ahead with the understanding that creates opportunities, and not only potential for adversity.

Management of corporate risks is a component of Cemig’s Corporate Governance Practices. It consists of mapping events that could interfere with achievement of the strategic objectives – these are described as *Top Risks*.

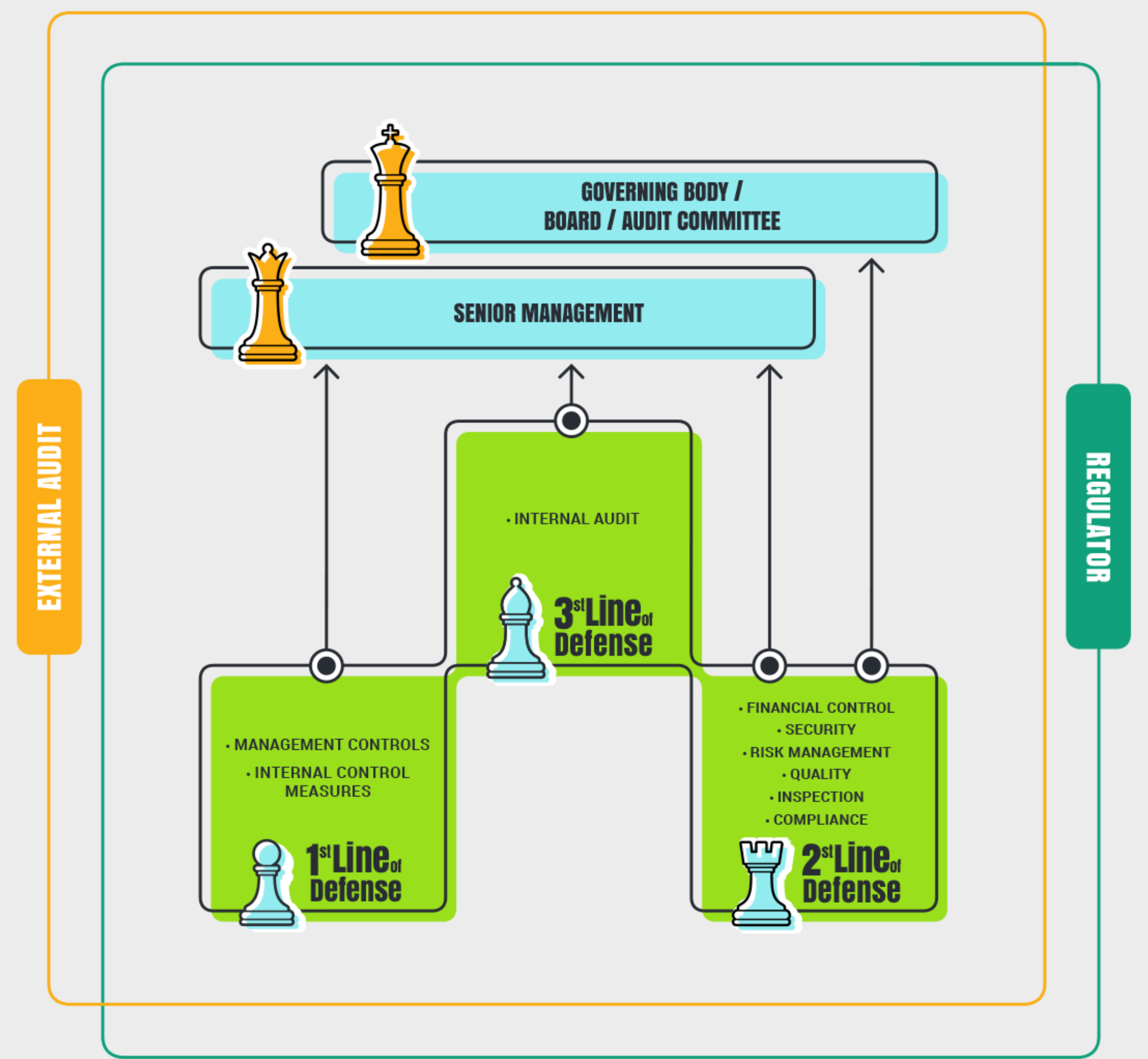
Another highlight for the risk management team is training of leaders and other employees to foster a culture of awareness of risks, now using the internal ‘GRC in Focus’ channel (referring to Governance, Risks and Compliance), created in 2017. The aim is to build a structure able to provide senior management with significant information, in a format ready for decision, to support preservation of the Company’s value. Structuring and analysis of operations from the point of view of risk management helps optimize investment in the control of the activity – reducing costs and losses, improving performance, and consequently helping the Company meet targets.

The SAP RM (Risk Management) software was installed in 2013. This enables continuous mapping of risks as people in charge of the activity in the system update their information and their assessment of the controls, and effectiveness of plans of action.

The mapping of the Top Risks in 2017 was oriented by themes for priorities stated by the CMRC, validated by the Executive Board and the Board of Directors and covering the distribution, generation, transmission and trading businesses, and the holding company – all the data being recorded in the SAP RM. Top Risks are continually reported to the Executive Board and the Board of Directors, as are the recommendations by the CMRC for dealing with each case, in accordance with a flow pattern approved by the Committee. At the end of 2017, after revisions, the risk matrix to be in place during 2018 was approved.

The Company’s current [Risk Management Policy](#), approved by the Board of Directors to transmit its vision on how the major uncertainties should be handled, is a public document that orients Cemig D, Cemig GT and all wholly-owned subsidiaries, and spells out the degree of risk appetite to be adopted. It is oriented by principles that translate best market practices, especially the ‘Three Lines of Defense’ governance model – a simple but effective way of improving communication of management of risks and internal controls by clarifying essential roles and responsibilities. This presents a new point of view on operations, helping to ensure continuous success of risk management. Cemig always considers the precautionary principle in its risk management, planning of operations and development of new business initiatives. As one aspect of this, particular attention is given in planning to factors that might present risks to health or safety of employees, suppliers, clients, the general public or the environment.

The Three Lines of Defense Model



A key action in 2017, addressing a social issue, was the due diligence process to support, prevent and protect the human rights of all audiences with whom Cemig interacts. Through a specific methodology, the actual and potential negative impacts resulting from the Company's activities were identified, aiming to avoid and mitigate them. In order to focus the work, the audiences and activities that had the greatest risks of violation of rights were identified, as a result of Cemig's activity. The audiences and rights that will be treated as a priority are described in the following table:

Public	Subject theme
Employees	Right to life
Suppliers	Right to life
	No forced labor
	Decent and fair work

In its due diligence process, Cemig identified as a greater risk in its own operations the life risk for its employees, especially those who work with the power system. The actions taken to mitigate / remedy these risks are being incorporated into Workplace Safety practices.

With regard to suppliers, in order to increase the focus of the work, since Cemig's universe of suppliers is extensive, the Company sought to identify the activities that present the greatest risks. The following activities were defined as the target of due diligence: deployment of high-voltage distribution enterprises, construction of distribution networks, execution of maintenance of distribution and attendance to customers of the distribution. Actions to mitigate these risks are being incorporated into supplier management.

These actions were implemented for the most relevant stakeholders and in 100% of the high risk sites and are described in the table below.



Public	Subject theme	Requirements	Mitigation actions	Monitoring actions
Employees	Right to Life	Cemig must ensure that its employees do their work with the proper level of safety, avoiding accidents that could lead to death	<p>Risk analysis</p> <p>Environmental Risk Prevention Program</p> <p>OHSAS 18001 audits</p>	<p>System of Monitoring and Audit for Analysis of Safety Practiced – SIMASP</p> <p>System of Monitoring of Accidents and Work Risks – SMART</p> <p>OHSAS Audits</p>
Suppliers	Right to Life	Cemig should guarantee that its employees do their work with the proper level of security, avoiding accidents that could lead to death	<p>Inspections and audits in the supply chain by independent teams</p> <p>Presentation of an action plan to correct the failing, and repeat occurrences, and efficacy found in quarterly audits.</p>	<p>Technical evaluation questionnaire</p> <p>System for Practiced Safety Monitoring and Auditing for Analysis – SIMASP</p> <p>System of Monitoring of Accidents and Work Risks – SMART;</p>
Suppliers	Right not to be subjected to forced labor	Cemig must ensure that work in its suppliers is in accordance with the Brazilian employment legislation, which prohibits forced labor or labor analogous to slavery.	<p>Contractual clauses protecting human rights</p> <p>Periodic audits including visits to suppliers' facilities</p> <p>Checking of working conditions: employment-law rights of employees, legal working hours, minimum of 11 hours between working periods, hygiene and health conditions, accommodation and other items</p> <p>ATI - Technical-Industrial Evaluation</p> <p>ATE - Contractor Technical Evaluation</p> <p>Procedure PE-MSQL-GDM-02 – identification of suppliers with high sustainability risk</p> <p>Supplier performance index ('IDF')</p>	
Suppliers	Right to decent and fair working conditions	Cemig must ensure that its suppliers work according to the Brazilian employment legislation, which includes, among other items, clear working hours, employee dismissal practices, remuneration, and practices in relation to Occupational Health and Safety Compliance.	<p>Contractual clauses protecting human rights</p> <p>Periodic audits including visits to suppliers' facilities</p> <p>ATI - Technical-Industrial Evaluation</p> <p>ATE - Contractor Technical Evaluation</p> <p>Procedure: Identification of suppliers with high sustainability risk Supplier performance index ('IDF')</p> <p>Indicators</p> <ul style="list-style-type: none"> <li>- Supplier performance index (DF)</li> <li>- IQSC – Contracted Service Quality Index</li> </ul> <p>Inspections and audits in the supply chain made by independent teams by visits to facilities and interviews to check compliance with requirements</p> <p>Monitoring and supervision of execution</p> <p>The execution of the contracts is monitored and supervised by the administration and may occur total or partial suspension of the contract, when there is risk to the security of the contracted employees.</p>	<p>QAT - Technical Evaluation Questionnaire</p> <p>ATI - Technical-Industrial Evaluation</p> <p>ATE - Contractor Technical Evaluation</p> <p>Use of indicators:</p> <ul style="list-style-type: none"> <li>- Supplier performance index - IDF</li> <li>- Supplier performance index - IDF.</li> </ul>

Cemig excels at respecting human rights and acts in alignment with the United Nations Universal Declaration of Human Rights with the core labor standards of the International Labor Organization (ILO) and the UN Global Compact, which signatory.

In order to reinforce its commitment and guide the practices of its managers, tax advisors, employees, trainees, contractors and subcontractors, business partners, suppliers and service providers, in 2017 Cemig formalized a public document entitled [Commitment to Human Rights](#). This commitment is based on practices already adopted by the Company and should be used in all relationships established as a result of Cemig's activities with its managers, tax advisors, employees, shareholders, society, customers, contractors, subcontractors, trainees and all those with whom the Company relates.





Wanderson José Rodrigues de Carvalho, plant operator, during the execution of maneuvers at the substation of the Itutinga Hydroelectric Power Plant.

# STRATEGY

## CEMIG STRATEGY

### NEW CEMIG STRATEGIC GUIDELINES



#### EXTERNAL CONTEXT (MARKET) INTERNAL CONTEXT (CEMIG)

- Analysis of the market
- Internal diagnostics



#### FOUR MAJOR CHALLENGES

- Review of the Portfolio
- Debt
- Compliance with regulatory requirements
- Human capital



#### INITIATIVES

- Redefinition of the portfolio of businesses
- Optimization of debt
- Adapt Cemig D to regulatory framework
- New strategy for human capital
- Increase in productivity

2017 was a year of major challenges for Cemig, with impacts on its results and its strategy. In spite of all its efforts, the concessions for four major hydroelectric plants – São Simão, Jaguará, Miranda and Volta Grande – were taken to auction, and won by other companies. The way forward for Cemig’s generation business thus becomes a key focus of attention. Analysis and discussion is in progress on the new outlook for this business, the Company’s availability of funding, and the competencies required to deal with market opportunities.



Strategic objective	Material aspect	Goal	Status	Timing	GRI Indicators
Maximize value for stockholders sustainably and complying with the Long-term Strategic Plan	Economic performance	Consolidated debt to be less than or equal to 2 (two) times Company's Ebitda (Profit before interest, taxes, depreciation and amortization).	<p>As per decision of the Extraordinary General Meeting of Stockholders of January 24, 2018, for reasons of temporary conditions, the Board of Directors authorized a maximum limit of Net debt / Ebitda of 3 times.</p> <p>At the end of 2017, net debt reached 4.1 times the Lajida of the fiscal year.</p>	Annual	G4-14, G4-45, G4-47
		Consolidated rate of (Net debt) / (Net debt + Stockholders' equity) to be 40% or less.	<p>As per decision of the Extraordinary General Meeting of Stockholders of January 24, 2018, for reasons of temporary conditions, the Board of Directors authorized a maximum limit for this ratio of 45% in 2018.</p> <p>At the end of 2017, net debt reached 50% of the Ebitda of the fiscal year</p>	Annual	
	Share price	Distribute at least 50% of Net profit as dividends.	Proposed to Annual General Meeting of April 30, 2018: dividends for business year 2017 of R\$ 500.5 million to be paid in a single parcel, equivalent to 50% of the net profit.	Annual	G4-14, G4-45, G4-47
Increase cash generation	Investments for growth - Plan for Development of Distribution (PDD)	To make investments of R\$ 4.9 billion (2013-2017) at Cemig Distribuição through PDD	Approximately R\$ 968 mn invested in 2017. Aggregate investment since 2013 is now R\$ 5.9 billion - more than target.	2017	EC1, EC2, EC8, EU26
		Investments of R\$ 4.5 billion between 2018-2022 through PDD	-	2022	
	Economic performance	Increase cash flow: Ebitda of at least R\$ 5.2 billion	In 2017, consolidated Ebitda was R\$ 3.5 billion.	2017	EC1, EC2, EC8
		Increase cash flow: Ebitda of at least R\$ 4.3 billion (reviewed target)	-	2021	

Ensure sustainability	Water	Reduce water consumption to 4% less than in 2011.	Consumption has been reduced by 77.2%, compared to 2011.	2020	EN8, EN9, EN10
	Electricity	Reduce electricity consumption to 4% less than in 2011.	Consumption has been reduced by 7.1%, compared to 2011.	2020	EN3, EN4, EN5, EN6, EN7
		IEPE – Plant Energy Planning Efficiency Index to be above 92.5%.	The IEPE for 2017 was 93.93%.	2017	EN8, EN9
		IEPE – Plant Energy Planning Efficiency Index – to be above 93%.	-	2018	
	Climate change	Reduce direct greenhouse gas emissions, measured in tCO2e, to 8% less than their level of 2014.	In 2017, direct greenhouse gas emissions (measured in tCO2e) were reduced to 92.1%, in relation to emissions in 2014.	2021	EN15, EN16, EN17, EN18, EN19, EN20, EN21
	Waste	To have 99% of industrial wastes recycled/regenerated or sold	In 2017, 99% of industrial wastes were recycled/ regenerated or sold.	2020	EN23, EN24
	Biodiversity	Maximum total affected biomass 1,784 kg.	Affected biomass in 2017 was 996.78 kg; details are in the chapter Biodiversity.	2017	EN11, EN12, EN13, EU13
		Meta: Maximum total affected biomass 819 kg until 2021. Status: This target will be achieved in steps: 2018 - 859 Kg 2019 - 845 Kg 2020 - 832 Kg 2021 - 819 Kg	-	2021	
		Conclude the urban afforestation inventory in Belo Horizonte, and insert the product as a routine work planning and programming tool.	Inventory of approximately 360,000 trees has been completed. Belo Horizonte City Hall is seeking partnerships, with Cemig among others, to complete the inventory of approximately 120,000 remaining trees.  The information gathered by this initiative is being inserted in the application of Distribution Management (GDIS), allowing the programming of interventions in the trees that interact with the electric distribution system in the Belo Horizonte region.	2017	
		Incorporate the methodology of Integrated Vegetation Handling as a standard procedure for opening transmission lines pathways.	Options for contracting this mode of service are under study. Costs of the activity have been itemized, for insertion into contracts currently in effect.	2019	
		Planting 70 ha / year of riparian forest	From 2015 to 2017, an average of 80.77 ha / year was planted, totaling 242.33 ha	2015-2017	
		Carry out the Cemig Urban Afforestation Circuit.	In 2017, the 7th Circuit was held in the cities of Betim and Lagoa da Prata. Held annually since 2011, the Circuit has already provided learning opportunities for more than 2,000 people in all regions of Minas Gerais State.	Annual	
		Elaborate the reduced and simplified version of the Annual and Sustainability Report.	In 2017 a specific version was not released.	2017	
	Social Project	Implantation of the Cemig Volunteer Program	-	2018	HR3, EU24
		Have 35% of employees participating of AI6% Program	-	2021	
	Management of suppliers	Outsourced Services Quality Index to be above 80%	Target achieved. In 2017, the Outsourced Services Quality Index was 83.61%.	2017	HR1, HR5, HR6
		Other targets for 2021, please see chapter of Supply Chain Management			
		Supplier Performance Index (IDF) at 80%	Target achieved. IDF was 80,02 in 2017.	2017	-
		Supplier Performance Index at 80%	-	2018	-



Ensure the quality levels set by the regulator	Quality of electricity supply	SAIDI (Consumer Average Outage Duration) to be below 10.88 hours	Target achieved. SAIDI measured in 2017 was 10.83 hours.	2017	EU6, EU29
		SAIDI to be below 10.58 hours	-	2018	
		SAIFI (Consumer Average Outage Frequency) to be below 7.58	Target achieved. Measured SAIFI in 2017 was 5.43.	2017	EU6, EU28
		SAIFI to be below 7.26	-	2018	
	Management of losses	Target for total losses: below 10.79%	Total losses in 2017 were 14.24%. Cemig has continued to make efforts to improve the manageable factors, to meet the target.	2017	EU6, EU12
		Target for total losses: below 10.92%	-	2018	
	Clients and consumers	Aneel Consumer Satisfaction Index (IASC): 72	In 2017 the IASC was 65.75	2017	PR5
		Satisfaction with Perceived Quality Index (ISQP) greater than 81.3%	ISQP in 2017 was 79,2%	2017	PR5
		Satisfaction with Perceived Quality Index (ISQP) greater than 82%	-	2018	
Develop strategic skills in a sustainable way	Employees	To have training efficiency index greater than 75%	Target achieved. The Training Efficiency Index in 2017 was 93.3%.	2017	LA9, LA10
			-	2018	
		Time of training per employee to exceed 12 hours	Target achieved. In 2017 training per employee was 35.52 hours.	2017	LA9, LA10
		Time of training per employee to exceed 15 hours	-	2018	
Establish safety as a value in the corporate culture	Health and safety	In the quest for Zero Accidents target, the TFA workforce accident rate to be less than 1.80.	The target of Zero Accidents was achieved in 2017, with the TFA workforce accident rate at 1.47.	2021	LA5, LA6, LA7, EU16
To be an innovator in the quest for technological solutions for the business	Innovation	Spend R\$ 290 million in research and development	So far more than 256 projects have been developed for investment of more than R\$ 99 million.	By 2018	EU8
	Innovation	INOV Innovation Effort index (Investments in R&D + innovation as a % of Net operational revenue) to be 0,30% for 2017-2021.	In 2017 this number was 0,49%	2022	EU8

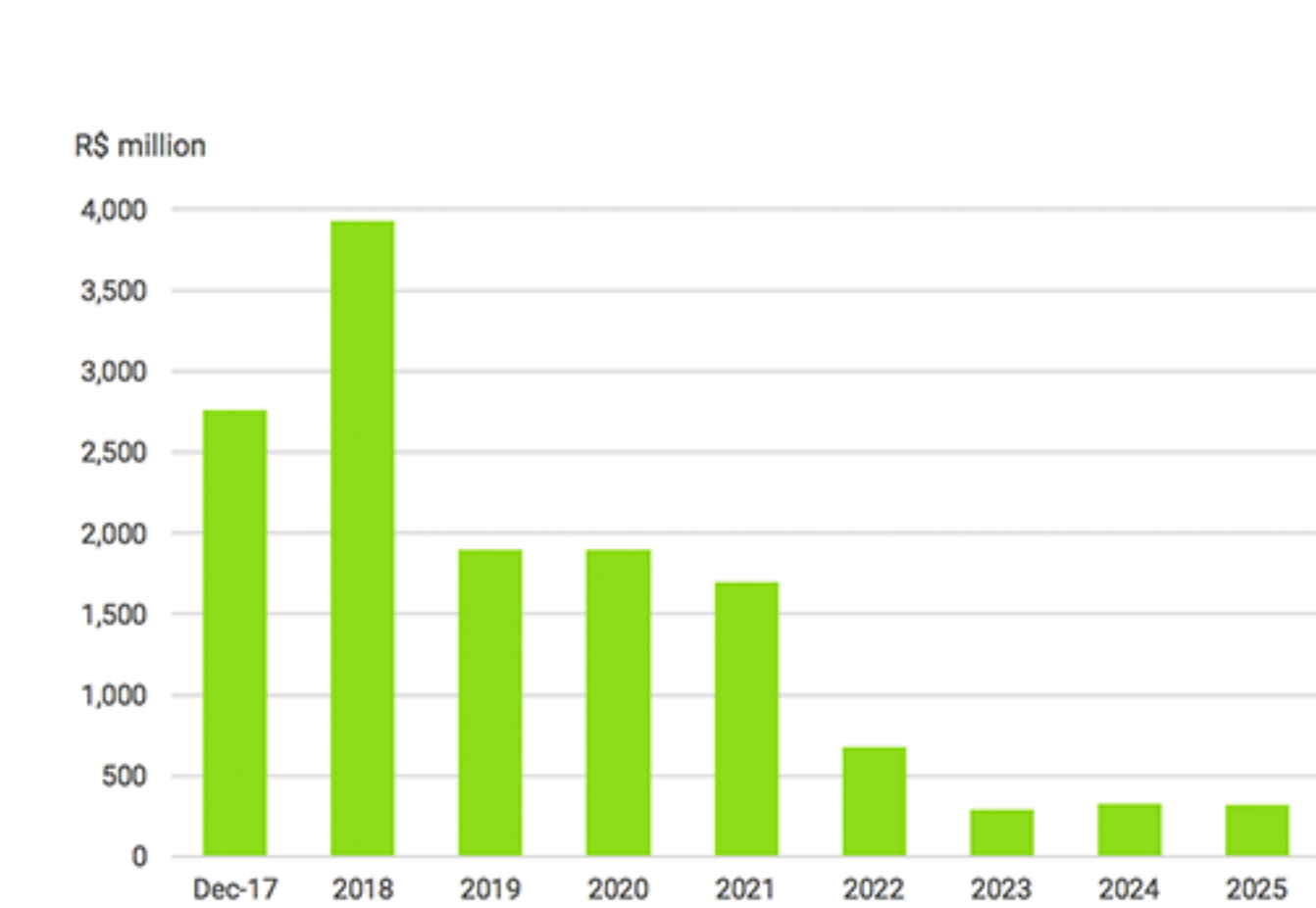
Another critical aspect facing Cemig in 2017 was its debt – a significant part of which was resolved in 2017 with successful action on two fronts: re-profiling of the short-term debt, and an international bond issue. These initiatives, detailed below, contributed to the settlement of a significant portion of Cemig's debt.

On December 28, 2017 Cemig reported to the market in a material announcement its completion of re-profiling of the debt of its wholly-owned subsidiaries Cemig D and Cemig GT – based on a debenture issue by Cemig D, and amendments to the lending agreements of Cemig D and Cemig GT, for a total of approximately R\$ 3.4 billion.

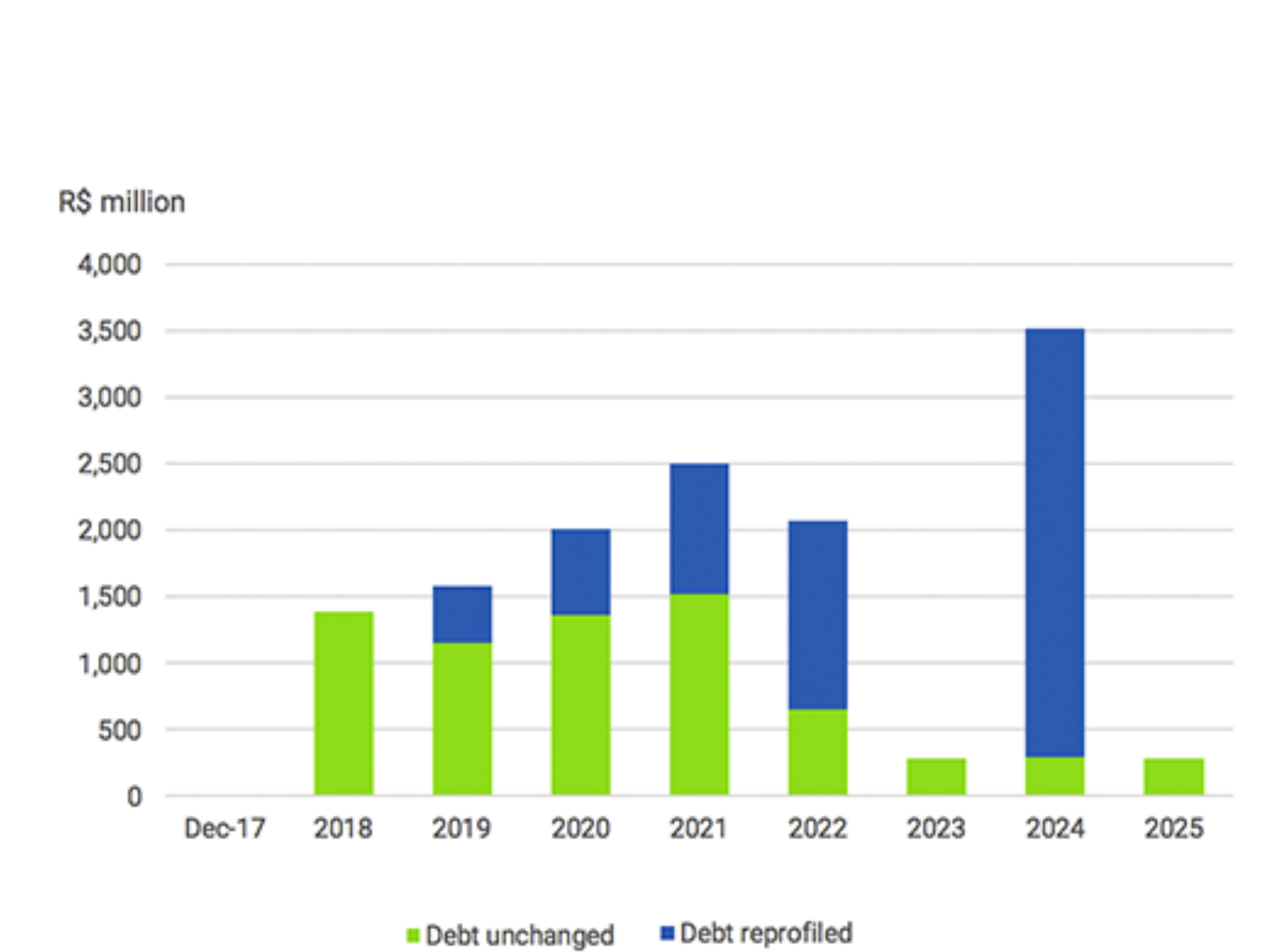
Added to this was R\$ 3.2 billion of new funding raised in the international market by an issue of Eurobonds – reported to the market on December 1 and December 5, 2017. With these successful negotiations Cemig D and Cemig GT rebalanced their cash flows, extended the average tenor of their debt, and improved their credit quality.

These charts show the improvement in Cemig’s consolidated debt amortization timetable:

Principal of Debt before reprofiling (Dez. 17)



Principal of Debt after reprofiling (Dez. 17)



Another important initiative contributing to Cemig’s reduction of its financial leverage has been its Disinvestment Program. Please, See details of the program in the chapter on Investments G, T and D.

In the transmission business, investments in strengthening and improvement of network and facilities are in progress in accordance with the business plan. In distribution, numerous actions are under way to ensure regulatory compliance. Cemig D (Distribution) has prepared its Plan for Results – aiming to improve the distribution service, especially in terms of compliance with the sector’s regulations – and presented it to the regulator, Aneel.

Cemig D Results Plan

FIVE PILLARS OF THE RESULTS PLAN

QUALITY OF SUPPLY

PDD QUALITY WORKS

COMMERCIAL QUALITY (IASC)

SAFETY INDICATORS

INDICATORS OF ECONOMIC AND FINANCIAL SUSTAINABILITY

No less importantly, having reached the target for reduction of headcount, with a consequent reduction in payroll, efforts are now centered on increasing productivity, optimization of structures and processes, and the use of tools such as a Careers and Compensation plan; performance evaluation; and succession plans to optimize effective results from the workforce. While resolving major challenges in the short term, Cemig needs also to plan its future. This was the subject of a seminar held by its leaders to conceptualize ‘Cemig in 2030’, approved by the Executive Board as a step toward a review of strategic planning, for submission to the Board of Directors. Presentations by leaders and external professionals discussed the future consumer, and the future electricity industry – also in relation to the Company’s present context, portfolio of businesses and financial projections for the medium and long term. The seminar created internal dynamic, mobilizing elements for a future ambition for the Company and its businesses:





The product of this seminar was approved by the Board of Executive Officers and is part of the construction of the proposal for reviewing strategic planning in progress, which should be submitted to the Board of Directors for consideration.

## CONCESSIONS

EC7    SDG9    SDG7

The activities of the Cemig Group in the segments of generation, transmission, distribution and sale of electric energy are regulated by Aneel, through concessions of the Federal Government.

Company holding concession or authorization		Concession or authorization contract	Expiration date
POWER GENERATION			
Hydroelectric plants			
Emborcação	Cemig GT	Jul-97	Jul-25
Nova Ponte (1)	Cemig GT	Jul-97	Jul-25
Santa Luzia (1)	Cemig GT	Jul-97	Feb-26
Sá Carvalho (1)	Sá Carvalho	Jan-04	Dec-24
Rosal (1)	Rosal Energia	Jan-97	May-32
Machado Mineiro (1)	Horizontes Energia	Resolution 331/2002	Jul-25
Salto Voltão (1)			Oct-30
Salto Paraopeba (1)			Oct-30
Salto do Passo Velho (1)			Oct-30
PCH Pai Joaquim (1)	Cemig PCH	Authorizing Resolution 377/2005	Apr-32
Irapé (1)	Cemig GT	14/2000	Feb-35
Queimado (Consortium) (1)	Cemig GT	Jun-97	Jan-33
Salto Moraes(1)	Cemig GT	Feb-13	Jul-20
Rio de Pedras (1)	Cemig GT	Feb-13	Sep-24
Luiz Dias (1)	Cemig GT	Feb-13	Aug-25
Poço Fundo (1)	Cemig GT	Feb-13	Aug-25

São Bernardo (1)	Cemig GT	Feb-13	Aug-25
Xicão (1)	Cemig GT	Feb-13	Aug-25
Três Marias (2)	Cemig Geração Três Marias S.A.	Aug-16	Jan-46
Salto Grande (2)	Cemig Geração Salto Grande	Sep-16	Jan-46
Itutinga (2)	Cemig Geração Itutinga	Oct-16	Jan-46
Camargos (2)	Cemig Geração Camargos	Nov-16	Jan-46
Coronel Domiciano, Joasal, Marmelos, Paciência e Piau (2)	Cemig Geração Sul	12/2016 and 13/2016	Jan-46
Dona Rita, Ervália, Neblina, Peti, Sinceridade and Tronqueiras (2)	Cemig Geração Leste	14/2016 and 15/2016	Jan-46
Cajurú, Gafanhoto and Martins (2)	Cemig Geração Oeste S.A.	16/2016	Jan-46
Thermal plants			
Igarapé (1)	Cemig GT	Jul-97	Aug-24
POWER TRANSMISSION			
National grid (3)	Cemig GT	006/1997	Jul-15
Itajubá Substation (3)	Cemig GT	79/2000	Oct-30
ELECTRICITY DISTRIBUTION (4)	Cemig D	002/1997	Dec-45
		003/1997	
		004/1997	
		005/1997	
GAS DISTRIBUTION (4)	Gasmig	State Law 11021/1993	Jan-53

(1) Generation concession contracts that are not within the scope of ICPC 01 / IFRC 12, whose infrastructure assets are registered as PP&E since the concession grantor does not have control over whom the services are provided to, the power being sold mainly in the Free Market ('ACL').

(2) Generation concession contracts, the revenue from the concession grant fees of which are within the scope of ICPC 01 / IFRIC 12, and which are classified as financial assets of the concession.

(3) Transmission concession contracts within the scope of ICPC 01 / IFRIC 12, within the financial asset model: The recognition of the revenue and costs of work are related to the formation of the financial asset through the expenditure incurred. The indemnifiable financial asset is identified when the infrastructure is built and is finalized and included as remuneration for the services of implementation of the infrastructure.

(4) Concession contracts that are within the scope of ICPC 01 / IFRIC 12 and whose concession infrastructure assets are recorded in accordance with the model of separation between intangible assets and financial assets.

## Generation concessions

In the generation business, the Company and its subsidiaries sell electricity through auctions, to distributors to meet the demands of their captive markets and to Free Consumers in the Free Market (Ambiente de Contratação Livre, or ACL). In the Free Market, electricity is traded by the generation concession holders, small hydro plants (PCHs or SHPs), self-producers, traders, and importers of electricity.

Free Consumers are those that have demand of more than 3MW at a voltage of 69kV or higher, or at any voltage if their supply began after July 1995.



# Concession expiration of the Jaguará, São Simão, Miranda and Volta Grande hydroelectric plants

Under Concession Contract 007/1997 the concessions of the Jaguará, São Simão, Miranda and Volta Grande hydroelectric plants, operated by the subsidiary Cemig GT, had expiration dates in August 2013, January 2015, December 2016 and February 2017, respectively.

Believing that it had the right to renewal of the concessions of the Jaguará, São Simão and Miranda plants, based on the original terms of the Concession Contract, Cemig GT filed administrative and court proceedings requiring their extension for the related renewal periods. These applications, however, were rejected by the Mining and Energy Ministry, on the view that the request was made out of time in relation to the period/rules set by Law 12,783/13.

As part of the court decision, in March 2017 the interim judgments that had maintained Cemig GT in possession and operation of the concession of the Jaguará and Miranda plants on the basis of the original Concession Contract 007/1997 were revoked. Cemig GT remained in control of the asset, and recognized the sales revenue from electricity, and the operational costs, of these plants up to the date of the revocation of those interim judgments. From that date onward, the subsidiary ceased to recognize the expenses of depreciation on the plants, and began to recognize revenues relating to the provision of services of operation and maintenance of these plants in accordance with the regime of quotas specified by Law 12,783/13.

As ordered by Mining and Energy Ministry Order 432/2015, the São Simão plant was being operated under the Quotas Regime since September 2015.

In spite of the fact that there were court proceedings still pending, involving the São Simão, Jaguará and Miranda plants, on September 27, 2017 the federal government auctioned the concessions for the *São Simão, Jaguará, Miranda and Volta Grande* plants. The latter had a concession contract expiry in February 2017. Together, these plants, previously belonging to Cemig GT, have total generation capacity of 2,922 MW, and the sale was made for a total of R\$ 12,130,784. The parties that won these concessions are not related to Cemig.

The new concession contracts were signed on November 10, 2017, and on this date extension of the periods of Assisted Operation was formalized, maintaining Cemig GT as the party responsible for provision of electricity generation service from the plants up to the following dates:

- Volta Grande plant: Until November 30, 2017
- Jaguará and Miranda plants: Until December 28, 2017
- São Simão plant: Until May 9, 2018

The Annual Generation Revenue (Receita Anual de Geração, or RAG) of these plants was recognized, in the amount of R\$ 461,638, in 2017 (R\$ 319,265 in 2016).

On August 3, 2017 Mining and Energy Ministry Order 291/17 established the values of indemnity, payable to Cemig GT, for the investments made in the São Simão and Miranda plants that have not been amortized up to the end of the contract. The total amount of the indemnity is R\$ 1,027,751, of which R\$ 243,599 relates to indemnity for the São Simão Plant, and R\$ 784,152 is for indemnity for the Miranda Plant – these figures being expressed in September 2015 and December 2016 currency, respectively. The amounts are being updated, pro rata die, by the Selic rate for federal securities, with updating revenues being recognized in the year, in the amount of R\$ 271,607 (more details in Notes 15 and 26). On December 31, 2017, these updated indemnities were in the amount of R\$ 1,084,346, and are recorded in Financial assets of the concession.

Cemig GT is discussing, with the Mining and Energy Ministry, the criteria used for deciding the amounts referred to in Ministerial Order 291/17, and also the date of payment, since that Order establishes that the payment of the indemnity must be made, by the federal government, on or before December 31, 2018, provided that there is budget and financial availability.

On December 31, 2017, investments made after the Jaguará, São Simão and Miranda plants came into operation, in the amounts of R\$ 174,203, R\$ 2,920 and R\$ 22,546, respectively, are classified in Financial assets of the concession, and the decision on the final amounts to be indemnified is in a process of discussion with Aneel. Management of Cemig GT does not expect losses in realization of these amounts.

## Power Transmission Concessions

The service of transport of large quantities of electricity over long distances, in Brazil, is provided by the National Grid, a network of transmission lines and substations operating at a voltage of 230kV or higher, referred to technically as the Basic Grid (*Rede Básica*).

Any agent of the electricity sector that produces or consumes electricity has the right to use the Basic Grid, as does the consumer, provided certain technical and legal requirements are met. This is referred to as Open Access, and in Brazil is guaranteed by law and by the regulator, Aneel.

The payment for use of transmission service also applies to generation provided by Itaipu Binacional. However, due to the legal characteristics of that plant, the corresponding charges are assumed by a number of holders of distribution concessions that hold quotas of its output.

For the transmission concessions, the portion of the asset that will not be amortized during the concession is recorded as a financial asset, since there is an unconditional right to receive cash or other financial assets directly from the grantor at the end of the concession agreement period.

Onerous concessions

In obtaining the concessions for construction of certain generation projects, Cemig GT undertook to make payments to Aneel, over the period of the contract, as compensation for the commercial operation. The information on the concessions and the amounts to be paid is as follows:

Project	Percentage interest	Nominal value in 2017	Present value in 2017	Amortization period	Updating index
Irapé	100	32,574	13,966	03/2006 – 02/2035	IGP-M
Queimado (Consortium)	82.5	8,198	3,844	01/2004 – 12/2032	IGP-M
Salto Morais Small Hydro Plant	100	77	73	06/2013 – 07/2020	IPCA
Rio de Pedras Small Hydro Plant	100	588	499	06/2013 – 09/2024	IPCA
Various Small Hydro Plants (*)	100	3,237	2,692	06/2013 – 08/2025	IPCA

(\*) Luiz Dias, Poço Fundo, São Bernardo, Xicão

The concessions to be paid to the concession grantor provide for monthly portions with different values over time. For the purposes of accounting and recognition of costs, due to the understanding that they represent an intangible asset related to the right of commercial operation, they are recorded as from the date of signature of the contracts at the present value of the payment obligation.

The installments paid to the grantor in 2017, the present value and the par value of the installments to be paid in the 12-month period are as follows:

Project	Percentage interest	Amounts paid in 2017	Present value of amounts to be paid in 12 months	Nominal value of amounts to be paid in 12 months
Irapé	100	1,905	1,792	1,901
Queimado (Consortium)	82.5	544	515	547
Salto Morais Small Hydro Plant	100	30	29	30
Rio de Pedras Small Hydro Plant	100	87	85	87
Various Small Hydro Plants (*)	100	422	412	422

The rates used for discounting Cemig’s liabilities to present value, of 12.50% for the small hydro plants and 5.10% for the conventional hydroelectric plants, are the average rates for raising of funds in normal conditions on the date of registration of each concession.

Power distribution concessions

Cemig D has the concession from Aneel for commercial operation of the activity of distribution in the greater part of the State of Minas Gerais, expiring in December 2045.

As determined by the concession contract, all assets and facilities that are linked to the provision of the distribution service and which have been created by the concession holder are considered reversible and part of the assets of the related concession. These assets are automatically reverted to the Grantor at the end of the contract, and are then valued to determine the amount of the indemnity payable to the concession holder, subject to the amounts and the dates on which they were incorporated into the electricity system.

Cemig D does not have obligations to make payment in compensation for commercial operation of the distribution concessions, but is required to comply with requirements related to quality, and investments made, in accordance with the concession contract.

The concession contracts, and the Brazilian legislation, establish a mechanism of maximum prices that allows for three types of adjustment to tariffs: (i) an annual tariff adjustment; (ii) periodic review of tariffs; and (iii) extraordinary reviews.

Each year Cemig D has the right to request the annual adjustment, the purpose of which is to compensate for the effects of inflation on the tariffs, and to allow for certain changes in costs that are outside the Cemig D’s control to be passed through to clients – for example the cost of electricity purchased for resale, and sector charges, including charges for the use of the transmission and distribution facilities.

Also, Aneel makes a Periodic Review of tariffs every five years, which aims to identify changes in Cemig D’s costs, and to establish a factor based on scale gains, which will be applied in the annual tariff adjustments, for the purpose of sharing such gains with Cemig D’s consumers.



Cemig D also has the right to request an extraordinary review of tariffs, in the event that any unforeseen development significantly alters the economic-financial equilibrium of the concession. The Periodic Review and the Extraordinary Review are subject, to a certain degree, to the discretion of Aneel, although there are pre-established rules for each cycle of revision. When Cemig D requests an annual tariff adjustment, it becomes necessary to prove the financial impact on operations resulting from these events.

Under the distribution concession contracts, Cemig D is authorized to charge consumers a tariff consisting of two components: (i) One part relating to costs of energy purchased for resale, charges for use of the transmission grid and charges for use of the distribution system that are not under its control ('Portion A costs'); and (ii) a portion relating to operating costs ('Portion B costs').

**Renewal of the Distribution Concessions**

On December 21, 2015, Cemig D signed, with the Mining and Energy Ministry, the Fifth Amendment to its concession contracts, extending its electricity distribution concessions for a further 30 years, as from January 1, 2016.

The principal characteristics and terms of the Amendment are as follows:

- The annual tariff adjustment will occur on May 28 of each year, starting in 2016; for this repositioning the rules specified in the previous concession contract were to be applied. For the subsequent tariff adjustments the rules set for in Clause 6 of the Amendment will be applied.
- Limitation of distribution of dividends and/or payment of Interest on Equity to the minimum established by law, if there is non-compliance with the annual indicators for outages (DECi and FECi) for two consecutive years, or for three in any five years, until the regulatory parameters are restored.
- Requirement for injections of capital from the controlling Shareholder in an amount sufficient to meet the minimum conditions for economic and financial sustainability.

- Subject to the right to full defense and right of reply, for the concession to be maintained, compliance is required with efficiency criteria for continuity of supply and for economic and financial management, as follows: (i) for five years from January 1, 2016, any non-compliance for two consecutive years, or non-compliance with any of the conditions at the end of five years, will result in extinction of the concession; (ii) as from January 1, 2021, any non-compliance for three consecutive years with the criteria of efficiency in continuity of supply, or for two consecutive years with the criteria of efficiency in economic and financial management, will result in proceedings to establish expiration of the concession.

The criteria of efficiency in economic and financial management are as follows:

- Operational cash generation (–) QRR<sup>1</sup> (–) interest on the debt<sup>2</sup> ≥ 0;
- Ebitda<sup>3</sup> ≥ 0 (by end of 2017, then maintained in 2018, 2019 and 2020);
- [Ebitda (–) QRR] ≥ 0 (by end-2018, maintained in 2019 and 2020);
- {Net debt<sup>4</sup> / [Ebitda (–) QRR]} ≤ 1 / (80% of the Selic rate) (by the end of 2019); and,
- {Net debt / [Ebitda (–) QRR]} ≤ 1 / (111% of the Selic rate) (by the end of 2020).

Where:

1. QRR – ‘Quota of regulatory reintegration’ = regulatory depreciation expense.
2. Net debt<sup>4</sup> x 111% of the Selic rate.
3. Calculated according to the method defined by Aneel, contained in distribution concession contract.
4. Gross debt, less financial assets.

The criteria for efficiency in economic and financial management of Cemig D were met in the year ended December 31, 2017.

**Gas Distribution Concessions**

The concessions for distribution of natural gas are given by Brazilian states. In the state of Minas Gerais the tariffs for natural gas are set by the regulatory body, the State’s Economic Development Secretariat, by market segment. The tariffs comprise a portion for the cost of gas and a portion for the distribution of gas. Every quarter the tariffs are adjusted to pass through the cost of gas, and once a year they are adjusted to update the portion allocated to cover the costs relating to the provision of the distribution service – remuneration of invested capital and to cover all the operating, commercial and administrative expenses of the concession holder.

In addition to these adjustments, in April 2015 the Economic Development Secretariat sent to the subsidiary Gasmig an Official Letter, SEDE/GAB/Nº303/2014 stating the timetable set for the first Tariff Review cycle. The decision process is still in progress; the latest estimated date for its completion is the beginning of the second half of 2017. These reviews occur every five years, to evaluate the changes in the costs of the Company, and to adapt the tariffs. The Concession Contract also specifies the possibility of an extraordinary review of tariffs if any event occurs that puts the economic-financial balance of the Concession at risk.

On December 26, 2014 the Second Amendment to the Concession Contract was signed by Gasmig and the Minas Gerais State Government, extending by 30 years the period of concession in which Gasmig may commercially operate the services of industrial, commercial, institutional and residential piped gas in the state of Minas Gerais. The expiration date of the contract was thus extended from January 10, 2023 to January 10, 2053.

<sup>4</sup> PPA - Power Purchase Agreement.

# INVESTMENTS IN GENERATION, TRANSMISSION, DISTRIBUTION; (DISINVESTMENT PROGRAM)

G4-13	EU6	EC7	SDG8	SDG9
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Cemig has among its strategic objectives the continuous search for innovation, with a view to achieving long-term sustainability. To follow up on its innovation effort, the Company has established an indicator titled INOV, which represents the ratio of investments made in R & D projects and other investments in innovation in the current year, in relation to its net operating revenue. Last year this indicator was 0.49%, higher than the 0.32% obtained in 2016 and 0.33% in 2015.

The holding company monitors and supervises management and development of subsidiaries and affiliates through active participation in their governance bodies, dedicated to good governance practices and the enabling them to fulfill their business plans.

Below is a description of the group’s main equity interests, with highlight information on 2017.

## Aliança

Aliança Geração de Energia S.A. (Aliança) is one of Cemig’s vehicles for operation in generation and trading of electricity. It was formally constituted in 2014 as a strategic partnership between Vale S.A. (55%) and Cemig GT (45%) based on the two companies subscribing their shares in Aliança by transfer to it of their interests in seven generation assets: *Porto Estrela, Igarapava, Funil, Aimorés, Capim Branco I, Capim Branco II, and Candonga* (formerly owned only by Vale). The plants have long-term concession contracts and a stable and predictable revenue for all their output over their coming years – through contracts with Vale, Cemig GT and the regulated market.

The *Santo Inácio* wind complex – with installed capacity of 99 MW and average offtake guarantee of 43.2 MW – began commercial operation in December 2017.

## Renova

Renova Energia S.A., founded in 2001, focuses on renewable power sources: wind power plants, small hydroelectric plants and solar plants.

It has faced financial challenges in the last two years, and centered strategy on three points in 2017: completion of projects; adaptation of the capital structure; and revision of the business plan.

In 2016 and 2017 Cemig GT increased its stake in Renova through subscriptions of shares for R\$ 296 million, to enable Renova to meet commitments. It now directly owns 34.15% of the share capital of Renova, plus a further 6.8% indirectly through Light.

In this period Renova significantly adapted its capital, with the sale of various assets, and began looking for a new partner with investment capacity.

Renova has sold the following assets:

- The Alto Sertão II wind complex, with installed capacity of 386 MW, and average offtake guarantee of 181.6 MW – sold to AES Tietê Energia S.A. for R\$ 600 million.
- 19,535,004 shares in TerraForm Global, to Brookfield Asset Management, Inc. for US\$ 4.75/share – a total of US\$ 92.8 million.
- The project for the Umburanas I and II power plants (average offtake guarantee 226 MW) – sold to Engie Brasil Energia, for a gain of approximately R\$ 300 million. This price comprised: R\$ 15 million for sale of the project, R\$ 64 million in settlement of the debt to General Electric; the R\$ 38 million penalty for cancellation of the contract with Seta for Phase B of Alto Sertão III; and R\$ 180 million representing net present value of the reduction of exposure to purchase and sale commitments under the BTG and Votorantim PPAs<sup>4</sup> (R\$ 69 million), and the Cemig GTA and Light II PPAs (R\$ 111 million) – assigned by the trading company Renova Comercializadora.

Also in 2017, Renova revoked the concession grants for 4 solar projects, Caetité I, II, IV and V, which had contracted supply at the No. 8 Reserve Energy Auction (Leilão de Energia de Reserva or LER) of 2014, thus avoiding a maximum potential loss of R\$ 101.2 million. This however resulted in prohibition on Renova and the SPCs involved from taking part in reserve auctions for 2 years. Also canceled, via the Excess and Deficits Compensation Mechanism (MCSD), were two contracts under New-build Energy Auctions (Leilões de Energia Nova, or LENs) – the A-5 LEN auction of 2012 (10.2 MW average) for the Alto Sertão III project, and the A-5 LEN of 2013 (178 MW average) of the Umburanas project.

At the end of 2017 Cemig accepted a proposal from Brookfield for a primary share subscription of R\$ 1.4 billion in Renova. On December 31, negotiation was at the final phase of adjustments for signature. This is a key phase in restructuring of Renova – so far comprising robust adaptation of its capital structure, sale of assets, renegotiation of debt to creditors for projects under construction, and significant reduction of debt of the holding company.

<sup>4</sup> PPA - Power Purchase Agreement.



## Taes

Transmissora Aliança de Energia Elétrica S.A. (Taesa), unlisted, is controlled by Cemig with 36.97% of the voting stock and 21.68% of the total stock. It is Cemig’s vehicle for growth in the transmission sector, building, operating and maintaining transmission lines in all the regions of Brazil – currently with a solid position in Brazilian electricity transmission.

It currently holds 34 concessions, for which its share (proportional to equity holdings) of total Permitted Annual Revenue (‘RAP’) for 2017-18 is R\$ 2.9 billion – of which R\$ 2.3 billion is from 27 concessions at operational phase.

The remaining 7 – projects under construction, contracted over recent years at transmission concession auctions held by the regulator, Aneel, are:

- *Mariana* – Lot A of Auction 013/2013, of December 2013, providing initial RAP of R\$ 11 million for capex of R\$ 107 million.
  - *Miracema* – Lot P of Auction 013/2015 held in April 2016, with RAP of R\$ 56 million for capex of R\$ 276 million.
  - 4 lots in Auction 013/2015, of October 2016: Janaúba (Lot 17) individually; Paraguaçu (Lot 3) and Aimorés (Lot 4) as part of the Columbia Consortium (Taesa 50%, CTEEP 50%); and ESTE (Lot 22) through its affiliated company EATE (Empresa Amazonense de Transmissão de Energia S.A.). Taesa’s proportional interest in these corresponds to total initial RAP of R\$ 315 million, for investment of R\$ 1.6 billion, from a total of 1,300 km of transmission lines.
- Lot 1 – ‘ERB1’ of Auction 005/2016, of April 2017, through the Columbia Consortium, in which Taesa’s 50% interest corresponds to initial RAP of R\$ 134 million, for capex of R\$ 969 million. These are all ‘greenfield’ transmission projects<sup>8</sup>. Taesa was also active in the market for ‘brownfield’ projects in 2017.

In November 2017 Cemig completed transfer to Taesa of its 5% stockholding interests (held through EATE) in the concession holders Transleste, Transudeste and Transirapé. With this restructuring, Taesa held an aggregate direct and indirect interest of 30% in Transleste, 29% in Transudeste and 29.5% in Transirapé.

Jointly with its affiliate ENTE, Taesa signed a share purchase agreement with Apollo 12 Participações S.A., for Taesa to acquire 24.95% and ENTE to acquire 50.10% of IB SPE Transmissora de Energia – a non-operational SPC acquired in Auction 013 of 2015 (Lot M), with initial RAP of approximately R\$ 60 million for capex of R\$ 370 million. This transaction is be submitted to Aneel, for approval, in accordance with legislation.

<sup>8</sup> Incipient projects, at planning phase.  
<sup>9</sup> Projects in which the funds are allocated to existing companies and/or projects.

## Light

Light S.A. is a subsidiary in which Cemig has an interest of 48.86%, of which 26.06% is held directly and 22.80% held indirectly.

In 2017 Light worked to create value for its stakeholders by improving management of its assets – in distribution, generation and trading: a continuous effort to improve operational efficiency and quality, focused on combating losses, and control of consumer default.

Light Serviços de Electricidade S.A., the distribution company, operates in 31 counties of Rio de Janeiro State. In an innovation strategy, it is currently diversifying and expanding its channels for serving customers, facilitating access and customer service with automated services, products and functions. The process of integration and unification of processes and experiences for the customer is part of the strategy of advances and innovations that the company is designing for the future.

ÚN1CO, a project to optimize services, has been developed with Cemig, and began operating in the third quarter of 2017 and is expected to provide operational gains.

Another highlight is the new version of the GDIS System, a technological update with standardized and modular architecture, which brings together dispatching systems of Light and Cemig, combining best business practices of both and resulting in new functionality, facilitating operation and service to clients.

In terms of quality of electricity supplied, the Results Plan and the Underground Network Modernization Plan were both implemented successfully over the year 2017, enabling the quality indicators DEC and FEC to be brought down to a level below that agreed with Aneel. This was possible due to intensified planning, action and monitoring of execution, to guarantee compliance and assertive performance.

In its combat of losses, Light maintained its focus on the areas with higher percentages of consumers with medium and high purchasing power. Much effort was focused on actions to restore normality and discipline to the market, aiming to consolidate change of behavior in clients that have in the past been responsible for irregularities. Many of these had debts renegotiated. The aim was to head off recidivism of frauds, and avoid consumer default. Light even launched something unprecedented in Brazil: a website exclusively devoted to correcting illicit connections: [www.riosemgatodeluz.com.br](http://www.riosemgatodeluz.com.br) (translating: ‘Rio without illegal electricity connections’). The aim is to mobilize, educate, sensitize the population, with a call to action, and especially to stimulate reporting of unlawful connections.

Test operation of the Lajes Small Hydroelectric Plant began in November 2017, adding 17 MW of installed capacity to the present 855 MW of the Lajes Complex. This was a historic milestone for Light – installation of a plant with advanced technology and high quality equipment, conceived entirely by the Company’s own people, at the same location where the first hydroelectric plant in Brazil was built more than 100 years ago. Benefits include increased water safety, and operational flexibility of the system, responsible for supply of drinking water to a large proportion of the Metropolitan Region of Rio de Janeiro.

## Gasmig

In 2017 Gasmig invested R\$ 54.8 million in infrastructure; R\$ 23.5 million in expansion of the natural gas distribution network in the state of Minas Gerais; R\$ 22.7 million in operation and maintenance of gas pipeline; R\$ 7.1 million in telecoms/IT and infrastructure; R\$ 944,000 in environmental management; and R\$ 493,000 in vehicle natural gas and acquisition of assets.

A further R\$ 928,000 was invested in preparing plans for future investment projects, to ensure their realization. These include master plans for residential expansion in the city of Belo Horizonte, and projects for various clients in the region currently served. In 2017, master plans were prepared for approximately 32.8km of extensions to the network.

Gasmig’s operational strategy focuses on replacement of fossil fuel (fuel oil, liquefied petroleum gas, coal) by natural gas, with major advantages for the environment and safety.

Natural gas in Minas Gerais is currently consumed mainly by industrial clients, and for thermal generation of electricity. For most gas distributors, including Gasmig, industry has for a long time been practically the only major consumer of natural gas – which is why the distribution network was developed on the basis of the industrial market segment. Its use for thermoelectric generation is more recent, with demand complementing hydroelectric generation during dry periods, and serving peak demands to reduce the risk of an overall supply shortfall.

Gasmig has repositioned, with a decision to intensify the distribution network, widen the diversification of its clients, and serve the commercial, services and residential segments more effectively – these have different consumption variation patterns than the other segments. Thus it has been investing in the residential, commercial and services sectors of the market since 2012.

In 2017, the result of this engagement was that its client base rose significantly, to 31,355. In 2012 the number of establishments served was only just over 300, mainly industrial companies and distributors of vehicle natural gas. The increase, of some 31,000 users in five years, is basically all in the urban market (homes and shops). In 2017 almost 16,000 new units were connected to the natural gas distribution network.

In terms of volume of natural gas distributed: 1.3 billion cubic meters were sold in 2017. Two major growth trends are in sales to industrial users, and for electricity generation. Due to resumption in manufacturing growth, and the competitiveness of natural gas, consumption of gas by industry, after two successive years of reduction, grew from 816 million cubic meters in 2016 to 909 cubic meters in 2017. And in electricity generation, with the worsening of the level of reservoirs, on rainfall below the historic average, there was higher dispatching of natural gas thermoelectric plants – causing an increase of demand from 228 million m³ in 2016 to 362 million m³ in 2017.

## Belo Monte Hydroelectric Plant

The first rotor of the Belo Monte hydroelectric plant started operation in April 2016. On December 31, 2017 thirteen of its twenty-four generation units were operating: seven in the Main Machine Room, with installed capacity for 4,277 MW, and six in the Complimentary Machine Room, at Pimental, with 233.1 MW – a total of 4,500 megawatts in operation. The full twenty-four rotors are expected to be in commercial operation by January 2020.

Cemig indirectly holds an equity interest of 11.69% in the project, through a 74.50% interest in Amazônia Participações S.A., and a 49% interest in Aliança Norte Energia Participações S.A. These two companies respectively hold 9.77% and 9% of Norte Energia S.A., the company with the concession to build, commercially operate and maintain Belo Monte.

By December 2017 more than 5,000 separate social and environmental interventions had been made in the middle section of the Xingu River. These include:

- 73 works in education – construction, refurbishing or expansion of school units;
- release of more than 3.2 million baby turtles – the arauá or South American river turtle (*Podocnemis expansa*); the pitui (*Mesoclemmys gibba*); and the tracajá (*Podocnemis unifilis*) into the environment in the last six years;
- initiatives in ethnic development, conservation and environmental recovery, helping to promote and protect the rights of 9 ethnic groups, benefiting more than 3,500 indigenous people in 12 traditional territories; and
- construction of 30 Basic Health Units, and three hospitals, to increase service to the population of the municipalities in the area surrounding the plant.



## Small Hydroelectric Plants – Guanhães Energia S.A.

Guanhães Energia S.A. is a special-purpose company, created to build four small hydroelectric plants (‘SHPs’): *Dores de Guanhães*, *Senhora do Porto*, *Jacaré* and *Fortuna II*, in Minas Gerais state, with total installed capacity of 44 MW. Cemig holds equity interests of: 49%, directly; plus 24.92% indirectly, through **Light**.

Construction of these plants was halted in December 2015, due to rescission of the construction contract due to default by the building consortium. After long negotiations with former and new suppliers, works to complete the plants were resumed in November 2017, with commercial operation of the first rotor planned for May 2018.

The associated social and environmental initiatives were continued in spite of the delays to the works: offsetting areas of forest and caves were considered, approved and acquired. With the environmental action practically completed, the *Dores de Guanhães* Plant acquired its License to Operate (LO) in December 2017. The other three plants are expected to get their licenses in early 2018.

### Santo Antônio Hydroelectric Plant

By the end of 2017 all fifty rotors of the Santo Antônio hydroelectric plant, in which Cemig owns an interest of 18.13%, were in operation, with the plant generating at full planned capacity: 44 rotors of the original project, plus six of the Basic Alternative Complementary Project.

The plant, which has installed generation capacity of 3,568 MW, cost approximately R\$ 20 billion to build. Of its 50 rotors, 44 will supply the national grid, and the other six – the expansion project – will serve exclusively the states of Rondônia and Acre, contributing to the safety and stability of the electricity system in that region.

In July 2017 Mining and Energy Ministry (MME) Order 222/17 reduced the physical offtake guarantee of the Santo Antônio Plant from 2,424 MW average to 2,328 MW average. The company is currently assessing and preparing legal actions to have that decision reversed or suspended in 2018. Meanwhile the concession holder (Santo Antônio Energia S.A.) is in negotiations with the MME and other bodies to release certain conservation areas necessary for the Basic Alternative Complementary Project to re-establish its currently reduced volume of supply.

## The Distribution Development Plan (PDD – Plano de Desenvolvimento da Distribuição)

In its Distribution Development Plan, Cemig D sets the priorities for investments to be made in its Regulatory Assets Base (BRR), based on prudent management of funds in the current tariff cycle – aiming to continuously increase availability of quality, safe supply in the quantity that clients in its concession area need.

The plan includes works for expansion, strengthening, overhaul and renewal of Cemig D’s assets – mainly substations and distribution lines – to improve functioning of the whole system.

The current five-year investment plan (a requirement of the regulation) is for 2013 through 2017. Cemig has expenditure of more than R\$ 5 billion approved for the period, on the following macro projects:

- High voltage expansion and strengthening
- Service to consumers, user access
- Improvements to the high voltage system
- High voltage operation and maintenance
- Medium and low voltage service – urban market
- Medium and low voltage service – rural market
- Low and high voltage Complementary Program
- Third party safety
- Overhaul and improvements to medium and low voltage networks
- Medium and low voltage operation and maintenance
- Change of metering/frontier metering
- Environment
- Telecommunications

In 2017 the Company invested R\$ 968 million, of a total approved allocation of R\$ 986 million. This 99.6% execution was only achieved with intense participation of all the areas of Cemig D. The key figure was the volume of assets capitalized by November – the month in which calculations for the tariff cycle are closed. By that date, Cemig D had capitalized a total of R\$ 1.9 billion.

The 2013–17 cycle thus closed with realization of the order of R\$ 5 billion, and capitalization of R\$ 4.95 billion.

These investments ensure sustainability of the distribution business, providing profitability and cash flow, optimizing value for stockholders, and client satisfaction due to ensured continuous supply as a result of more efficient operational processes. For Cemig they mean compliance with the quality requirements set by the regulator, reduction of losses, and in general ensuring availability of electricity for the market with safety and quality, within the environmental requirements.

Any imbalance between planning of funding, mobilization of manpower by contractors, and/or supply of materials can result in delay of project completion, loss of quality in power supply, loss of revenue, and potentially penalties and even loss of the concession.

Of equal importance to execution of investments is their capitalization in the accounting of the Company’s Regulatory Asset Base, which is the source of the Distributor’s revenue. If the capitalization does not take place in accordance with the regulation and deadline, Aneel can decide not to remunerate the asset – resulting in loss of revenue, as well as constituting an infringement subject to a financial penalty.


In 2017 Cemig D worked to maximize execution of the budget, and thus capitalization of the projects of the PDD, and minimize any events that might interrupt the flow of works execution.

Optimal application of investments has the aim of maximizing the distribution company’s revenue, and minimizing its operational costs.

Cemig’s Disinvestment Program

In response to the increasingly adverse economic context, in 2016 Cemig began a process of sale of assets, and on June 1, 2017 formally published its Disinvestment Program, which aims to reestablish financial balance through rapid reduction of net debt.

The criteria for choice of priorities in the Disinvestment Program were:












1	 LIQUIDITY	ASSETS WITH THE HIGHEST LIQUIDITY
2	 RETURN LP	ASSETS THAT ARE NOT EXPECTED TO PROVIDE RETURNS IN THE SHORT TERM
3	 STRATEGIC	ASSETS THAT ARE NOT STRATEGIC AND/OR IN WHICH WE HAVE LESS SIGNIFICANT EQUITY INTERESTS

A portfolio was selected, reflecting these priorities, to meet the need for reducing leverage. Since the processes of sale are subject to legal, corporate and regulatory restraints, the Company adopted expectation of a success rate of at least 50% by the first half of 2018.

The following sale transactions were completed in 2017:

Asset	Acquirer	Closing date	Amount (RS mn)
Shares in Terraform Global	Brookfield Asset Management	3-Jul-17	352
Alto Sertão II Wind Complex	AES Tietê	3-Aug-17	600
Umburanas Wind Complex	Engie Brasil Energias	24-Nov-17	17
Units da Taesa	The public, via stock exchange (B3)	24-Nov-17	717
Transmineiras (Transleste, Transudeste, Transirapé)	Taesa	30-Nov-17	80

Status of the Disinvestment Program at December 31, 2017:

COMPANY	CRITERION			% PARTICIPATION	BOOK VALUE¹ R\$ MN	STATUS
						
	✓	✗	✗	9,86%	717	Concluded
	✓	✗	✓	25%	80	Concluded
	✗	✓	✓	18%	1.278	Sale negotiation resumed
	✗	✓	✗	-	317	Binding proposal accepted by stockholders, Investment Agreement being negotiated
	✓	✗	✗	48,86% ²	1.570 ³	Analysis of non-binding proposals for possible selection for next phase
Cachoeirão, Pipoca, Paracambi	✓	✗	✗	49%	127	Negotiations halted: awaiting decision on strategy
	✗	✗	✓	49% ON 100% PN	1.202	Studies on expiring of present concession
	✗	✗	✓	100%	193	Procedure in progress for decision on new structure for the disposal
	✗	✓	✓	12%	1.392	Redefinition of transaction structure: disposal process for privately owned part suspended
Gas exploration concessions	✗	✗	✓	24,5%	16	Preparation of Auction Tender Text

1 Amounts reported in the Company's accounting, with the exception of: Taesa, Transmineira, and Light S.A.  
2 The equity interest in Light changed from 43% to 48.86%, due to the capital increase in RME and Lepsa, as published in Material Announcement on November 30, 2017.  
3 Market valuation (B3 – São Paulo Stock Exchange) on December 28, 2017: R\$ 16.69.



# TECHNOLOGY AND INNOVATION (R&D, ALTERNATIVE ENERGY SOURCES, OPEN INNOVATION)

EU7	EU8	EC2	EC4	GC9	SDG9
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One of Cemig’s strategic objectives is a continuous quest for innovation, aiming for sustainability over the long term. To assess its efforts in innovation, Cemig has an indicator called INOV: this is the ratio between (a) investments made in R&D projects and other investments in innovation in the current year, and (b) net operational revenue. In 2017 this indicator was 0.49%, higher than the 0.32% for 2016 and 0.33% for 2015. Cemig’s target for the 2017 was 0.30%.

Cemig acts in innovation in various areas to create value for the business as a whole – ranging from innovations in products and processes to innovations in organization and marketing.

Examples of innovation in products and processes include:

- creation of goods and services to increase availability of assets, reducing lead time for service to the end client;
- innovations for agility and mobility in access to Cemig and its services;
- innovations to increase the safety of both workers and the system; and
- development of new work tools, and more up-to-date equipment.

This type of innovation typically occurs in Cemig’s technical areas that use its Strategic Technology Management (Gestão Estratégica de Tecnologia, or GET) methodology. Cemig also creates innovation in organization and marketing, generating new market practices, a new approach to external relationships, changes in the promotion of its principal product and added services, and in its positioning in the market. Examples are:

- Joint purchases of materials and services by group companies, seeking price and volume;
- new tools for development of people and their intellectual capital;
- tools for automation of processes – such as purchase and sale of electricity;
- tools for reduction of environmental impacts and litigation;
- strategic partnerships;
- spinoffs;
- technological cooperation agreements;
- creation of new client service channels;
- simultaneous meter reading and bill printing; and
- new outlooks for dealing with and treating large clients and suppliers.

The Research and Development (P&D) program is one of Cemig’s highlight vectors for innovation. A wide range of projects are developed under it. At one end of the scale there are projects to add to existing technology – providing operational efficiency gains and lower costs; at the other, there are projects for radical or disruptive innovations, capable of supplying entirely new products, possibly having a significant effect on the market.

## Cemig’s Strategic Technology Management (GET) – “An instrument of competitiveness and optimization of corporate results”

Technology is a strategic input, enabling development of the business and accretion of value to products and services. Cemig created its Strategic Technology Management (GET) methodology in 1999. This aligns technological strategies to entrepreneurial directives and guidelines. It seeks to ensure use of the most appropriate technologies, and obtain rapid responses to changes in scenarios and the frequent changes in an increasingly dynamic and competitive market.

In 2006 the GET methodology was reviewed to adapt to developments in the power industry and the 2004 differentiation between business sectors, with a closer focus on innovation. It has since been adapted further to increase productivity and the volume of new initiatives and projects – which is growing every year. The GET methodology has four steps:

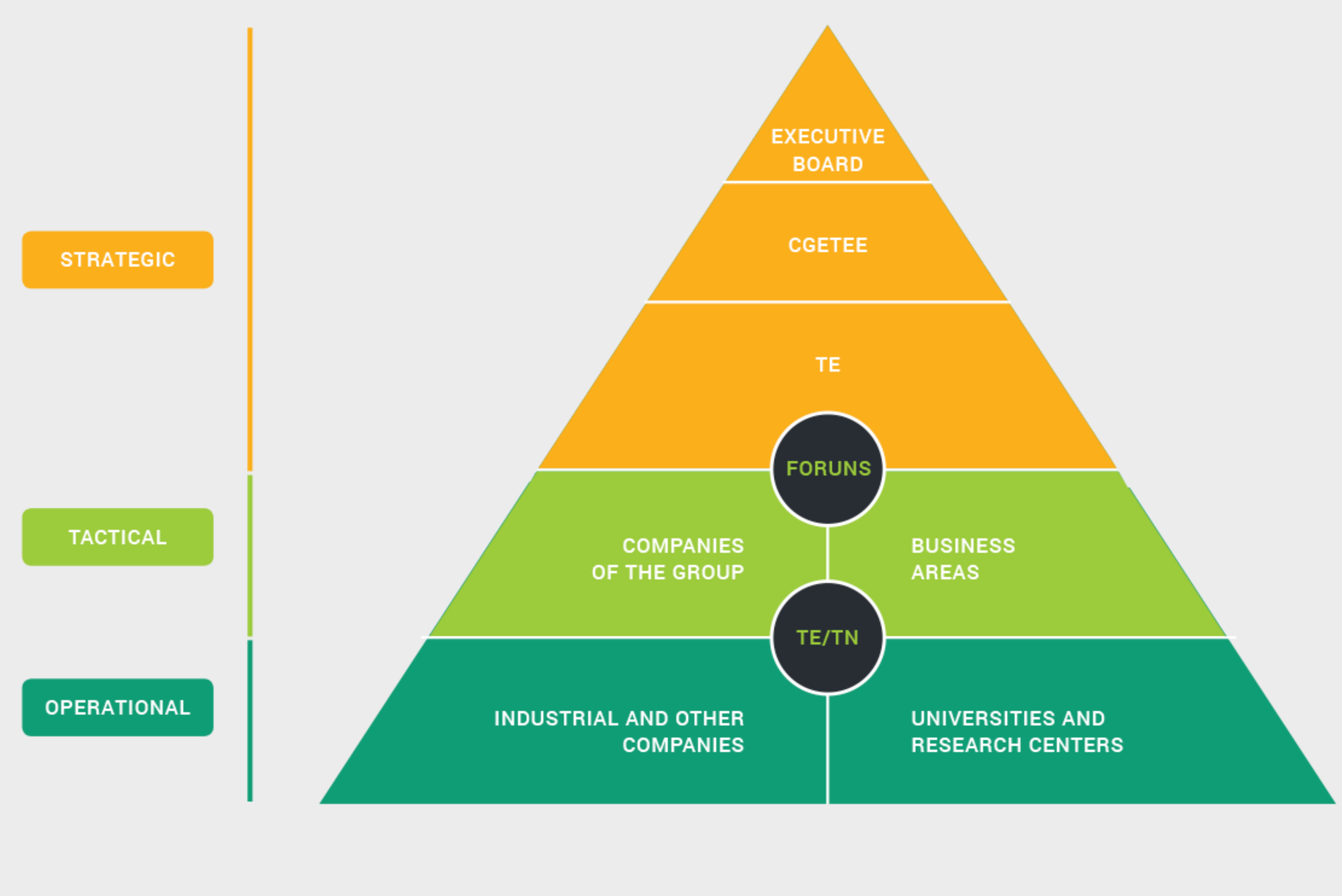
- Strategic analysis,
- technological audits,
- technological action plans, and
- implementation and monitoring.

Typical tools include:

- technological prospecting and analysis;
- identification of threats and opportunities in the business, and weak and strong points;
- study of outcomes arising from Corporate Strategic Planning;
- choice of R&D and Innovation programs to further the business;
- continuous improvement and dissemination of technical support methods.



The Technology Action Plans are financed with mandatory non-refundable resources under Laws 9991/2000, 10438/2002 and 10848/2004 – from sector funds, Brazilian and international development entities, foreign funds, and some of Cemig’s own funds. This diagram indicates the entities involved.



The GET methodology is structured into: strategic, tactical and operational.

The strategic stage is for decisions on technology policies, and approval of plans for projects: choice of technology, budgets, plans and innovation component.

Cemig has two bodies responsible to the Executive Board for developing and implementing the GET and innovation across the Company:

- a. the Technology, Innovation, and Energy Efficiency Management Committee (CGETEE), and
- b. the TE (Technology and Energy Alternatives) Management Unit.

These are constantly monitoring technologies:

- identifying threats and opportunities, proposing short, medium and long term technology policies and actions;
- evaluating, testing and experimenting with technology;
- incorporating innovations;
- continually training employees for technology and innovation, and
- orienting optimal conduct of R&D programs.

At the tactical level, policies and initiatives are applied throughout the group’s businesses and companies, aided by the TE and TN management units. Cemig created its Technology Forums, which help consolidate a culture of innovation, and also bring in specialists to participate directly in strategic planning of technology, technical audits, and support for decision-making in the various processes of innovation management.

Intermediation between tactical and operational levels – materialization of projects and plans of action through partnerships and agreements – is the responsibility of the TE/TN Management Unit. Its duties include:

- promoting development of technological partnerships for the Company;
- and, with the other Management Units, identifying and developing potential partnerships for operation and opportunities to create centers of technological excellence.

## Research and development (P&D)

EU7	EU8	EC4
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One of the GET’s main activities is coordinating the Annual Technological Research and Development (P&D) Program. This involves helping identify, prepare and get approval for technological projects, and identifying and establishing partnerships to execute them.

The R&D Program is the main vehicle of Cemig’s innovation. Projects are selected by an internal committee comprising representatives of all the director-level management units, which assesses them for alignment with the strategic guidelines.



Actions in the R&D program cover a considerable range, including:

- research and surveys; development of alternative technologies; production and publication of technical and scientific knowledge;
- encouragement of industrial development plans and programs, and research projects to incorporate technological innovations;
- stimulating, fostering and establishing Centers of Excellence and Research Institutions, for development of studies, surveys and provision of technological services;
- creating, structuring, promoting and coordinating research projects and action, technological development, knowledge management, innovation management and production of technical standards;
- services and development help for research and innovation projects in generation, transmission, distribution and trading of electricity, energy sources and alternatives, and the environment;
- promoting, organizing and developing training, courses, internships, seminars, congresses, exhibitions, lectures and other technical events;
- incubation of new businesses and projects;

- coordination and assembly of technological education and professional training laboratories;
- management of technical research and development entities, laboratories and other similar institutions;
- coordination and promotion of Cemig’s technological partnerships, identifying, with the other areas of the Company, potential partnerships and opportunities to create Centers of Technology Excellence;
- promotion of all types of interaction between the worlds of science, technology and innovation and the productive sector;
- promotion of culture, social responsibility, environmental preservation, economic and social sustainable development, and combat of poverty, stimulating social and voluntary projects and actions via technology;
- appropriate negotiations to establish agreements, contracts, partnerships and cooperation understandings with public and private bodies and entities, Brazilian or foreign, on authorization by the Executive Board;
- partnerships with civil society organizations and the third sector in general, authorities, municipal, state and federal committees and councils, and membership of sector or technical organizations;

- conduct and management of the technical, administrative, financial and operational activities relating to the R&D projects;
- advising the Executive Board and the Board of Directors on technological subjects;
- creation of technical committees to assess and monitor activities under the R&D programs and projects, with course-correction when necessary;
- researching other financing sources and Brazilian and international R&D entities, and making proposals for funding from the bodies to the director-level units and Board of Directors;
- receiving funding from outside parties under technological partnerships for development of specific projects;
- obtaining revenues from technological development, technical standardization, and protection of intellectual property;
- revenue from sales products;
- obtaining of tax waivers and incentives;
- revenues from rights of authorship and intellectual property; and
- expansion of opportunities for technological advances and innovation, expanding the interaction with the productive sector of the power industry and external partnerships, raising funds and thus optimizing the process of transfer of technology to the productive sector (industrialization of products, and commercial exploitation of patents).

## Intellectual property

Cemig’s work to protect its intellectual property includes various aspects:

- analysis of feasibility, and other aspects of securing rights to inventions, brands, software, internet domains and other creations;
- orienting applicants in preparation and monitoring of applications for protection; and
- custody and disclosure of patents, registrations and other intellectual property assets.

Through its Brands and Patents Office, Cemig and its subsidiaries have 15 patents registered and 59 applied for. Eight new patent applications were made in 2017.

## Strategic technical standardization

Cemig sees technical standardization as strategic, and has formed a committee to standardize materials and equipment, including individual and collection protection (EPI and EPC) accessories, tools and equipment. This committee has responsibilities:

- to work with the areas concerned to produce standardization documents, including requirements for innovations in materials and equipment;
- to identify opportunities to obtain intellectual property rights over technologies developed in the processes of standardization.

## Partnerships

*Strategic Technology Management* aims to establish strategic technology partnerships to foster creation of centers of excellence in Minas Gerais. These may be alliances with universities, other power industry companies, research centers, communities, etc.

Centers of excellence aim to share resources, improve the use of existing competencies and infrastructure, internalize best technological practices, eliminate waste and duplication, and foster the creation of centers for industry and technological services in the region.

## The ‘Lei do Bem’

Since 2006 Cemig has used the benefits of the ‘Lei do Bem’ law, which makes certain spending on technological research and innovation projects tax-deductible. Tax deductions so far total approximately R\$ 82.4 million.

To qualify for the benefit, Cemig has to identify innovation projects responsible for gains in quality and productivity, and those that have improved its processes.

## Alternative energy sources

In Cemig’s view, the term ‘Alternative energy sources’ covers the whole energy chain, including: transport; manufacturing; technological routes; supply and storage; energy efficiency; and final use of electricity. Hence, a wide range of current phenomena, techniques and trends are involved in, and are mutually dependent elements of, the matrix of electricity supply. Examples are: new sources; new technologies; distributed generation; the smart grid concept; electric vehicles; energy efficiency; and better use of the traditional energy resources. These ‘alternatives in energy’ communicate with each other, as illustrated in the circular diagram.



The themes of technology, innovation and sustainability are intrinsically linked with all concepts of alternative energy sources. Cemig’s investments in applied research in this sector are a factor in its continuing recognition by the Dow Jones Sustainability Index – it has been included in this worldwide index for the last 17 years. This commitment means acting decisively on processes in the Company’s strategic map, strengthening it.

Cemig keeps up with the state of the art in technologies, seeking new technological pathways and business options over the whole field of electricity, contributing expertise and participating in a wide range of committees and groups – including:

- the Energy Committee of Minas Gerais Industries Federation (Fiemg);
- the Minas Gerais State Biodiesel Policy Committee;
- the Belo Horizonte Municipal Committee on Climate Change and Eco-efficiency (CMMCE);
- the CMMCE of Betim;
- the Minas Gerais State Climate Change Energy Plan Development Group,
- coordinated by the State’s Environmental Foundation (Feam) and the Minas Gerais State Sustainable Development Department (Semad);
- and the State Project Management Committee for Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil, – coordinated by the Brazilian Environment, Trade and Industry Ministries with funding from the Global Environment Fund (GEF).



Cemig also publishes articles on new knowledge. Examples can be seen in the section on Energy Alternatives of Cemig’s website ([www.cemig.com.br](http://www.cemig.com.br)). The intentions and effects of alternative energy sources are essentially positive:



Cemig assesses R&D proposals on the following aspects:

- The balance of funding in the R&D program account, the legal budgetary obligations and their allocation in the last 24 months.
- The proposal’s ‘innovation intensity’ – a ratio between Cemig’s net revenue, the spending involved, and Cemig’s total spending on innovation (including the Aneel R&D program, existing internal technology and innovation programs, and the costs of any non-Aneel-related projects).
- Operational expenses on personnel, materials, services and other items.

Alternative energy sources – main projects active in 2017

- **The 31<sup>st</sup> edition of the Minas Gerais State Energy ‘Balance Sheet’ (‘BEEMG’).** Based on the year 2015, this updates the historic series listing all energy sources and uses in the state over the period from 1978. As such it is an important source of essential data in studies for integrated use of energy sources, energy efficiency, technical management, socioeconomic initiatives, greenhouse gas emission studies, and sustainable development in general. The updated version again clearly shows the preponderance of energy from renewable sources in the composition of the state’s energy mix. It is available for download [here](#).
- **Gasification of solid urban waste for generation of electricity:** Cemig GT R&D Project No. 418, completed in 2017, in partnership with the Federal University of Itajubá and the company AG Therm Caldeiras e Equipamentos. The aim was to build a pilot scale unit for fluid bed gasification of combustible elements derived from urban solid waste biomass, reducing their environmental effect. The report on the technological progress achieved was presented in 2017, and the project’s closing workshop was held.

- **Development of a photovoltaic-thermal (PVT) solution to improve the efficiency of solar generating plants:** This project (GT 498), in partnership with UNA, aimed to develop a PVT system for pre-heating of water, by withdrawing heat from photovoltaic modules used for generation of electricity. Final tests were held in 2017, and the report on the research has been presented. The project was publicized through its closing workshop.
- **IT management to foster sustainability of the electricity generation assets of Cemig and Minas Gerais:** This project (GT 553) was executed by UFMG (Minas Gerais Federal University), and aimed to use information science and management tools to help the decision process on new projects, associated with economic and financial modeling applicable to renewable energy sources. The result is a software product, which was tested and validated in 2017. Completion of the project is planned for 2018.
- **Assessment for development of the potential for co-generation in the cement industry of Minas Gerais:** This project (GT 554), executed by PUC University of Minas Gerais, aims to research the potential for co-generation projects in the cement sector in Minas Gerais using the Kalina thermal generation cycle, that would be feasible for execution by companies of the Cemig group with an appropriate technology. Technical visits were made to a cement company in 2017, and articles were published at ENCIT (the Brazilian Congress of Thermal Sciences and Engineering). The project is scheduled for completion in 2018.
- **Development of computational models, methods and system for forecasting wind speed over short and long time horizons:** This project (GT 555 – UFMG) aims to develop a new model for forecasting of winds, for study of wind power potential, and assessment of projects. Executed in 2017, it is scheduled for completion in the first half of 2018.
- **Development of multi-objective optimization computer tools applied to the problem of the energy matrix considering the uncertainties of scenarios, environmental impact and new technologies:** This project (GT 556 – UFMG) aimed to develop computational tools to enable Cemig to investigate the energy matrix, making best potential use of prospective and planning scenarios. Concluded, with description of achievements, in 2017, with the validation of mathematical models and algorithms for optimization.
- **Development of a system for calculation of the electricity generation potential from biomass in Minas Gerais State:** This project (GT 557), in partnership with PUC University of Minas Gerais, mapped the type of cultures and wastes used for generation of electricity from biomass, with georeferencing to map the use of biomass throughout the State. It was an opportunity to maintain a clean energy matrix with distributed generation; and specify the most appropriate regions/counties for construction of parts to make use of biomass for energy, and identify the best technology choices for each are selected. The project issued its publications (a book, an atlas, a summary and a mobile phone app) in 2017, and held its closing workshop. The official launch and distribution of the document will be as from 2018.
- **Developing technical and institutional arrangements for generation of electric power from biogas from urban solid waste:** The objective of this project (GT 714 – in cooperation with and proposed by Endesa, of the Enel Group) was a wide-ranging study of all regulations, public policy, planning, technical, commercial and economic aspects to extract the maximum gain for the use of biogas from urban solid waste. Results of the study were published, and the closing workshop held, in early 2017.





Carolina Patrícia da Silva Monteiro, attendant at the service sector of Cemig's Cidade Industrial agency.

# CLIENTS AND CONSUMERS

Cemig's mission and future vision highlight the importance of excellence in client satisfaction as a strategic aim.

There are also risks to be mitigated, since in the present regulatory framework either regulators or even consumer defense bodies can also impose financial penalties if the quality standards demanded by the regulatory body and expected by clients are not achieved, and there is also the risk to reputation. Cemig works continuously on improving operational management, organization of the logistics of emergency services, and its permanent regime of inspection and preventive maintenance for substations, distribution lines and networks – while at the same time investing in continually improving the qualifications of its professionals, in state-of-the-art technologies, and in standardization of work processes.

Relationship with consumers is a priority subject in Cemig, regularly reviewed both by management and the stockholders. This priority is expressed in the Mission – the principle of operating with quality; and in the Vision, which seeks admiration for the Company and its recognition for solidity and performance. See:

[http://www.cemig.com.br/en-us/the\\_cemig/about\\_us/Pages/mission\\_vision\\_values.aspx](http://www.cemig.com.br/en-us/the_cemig/about_us/Pages/mission_vision_values.aspx)

Cemig has worked intensely on enhancement of its communication channels, in all forms: over the web, in person, and by phone. Today a Cemig client can connect via mobile apps including Cemig Atende, Telegram, and Facebook. The online channels currently account for 49% of total customer care demand.

Cemig is also working continuously on improvement of service through its Distribution Development Program (PDD) – a major program of investments associated with expansion and renewal of substations, distribution lines and networks – which among other aims seeks to reduce frequency and duration of outages.

## RELATIONSHIP WITH CORPORATE CLIENTS

Cemig's portfolio of corporate clients is a significant percentage in its total sales, and consequently total revenue. Two director-level Commercial Relationship Management Units have been created, to offer a specific service compatible with the scale and importance of large-company clients.

Cemig's corporate clients category includes mainly large companies in power-intensive industries, basic industries and manufacturing, both inside and outside the distribution concession area. For these companies electric power is an important input in their production, and they usually have demand for 3,000 kW or more, which is the requirement for the status of 'Free Client' – i.e. consumers allowed to contract supply from any supplier they choose, either one-off or under a longer-term bilateral contract. Due to the complexity of the contracts and the need for a differentiated relationship that can maintain and/or amplify Cemig's market share, personalized customer care is thus vital; and to provide it Cemig invests in a team of professionals with specific technical knowledge, responsible for managing these contracts and all associated demands, as well as prospecting and contracting new clients.

The Incentives Market: This is another category of clients, described by the legislation as 'special clients': they are medium-sized companies, from inside or outside the concession area, with demand of 500kW or more, and may buy supply from various suppliers, provided the supply is from a renewable, incentive-bearing source – and receive a discount on the tariff for use of the distribution system. All sales to these clients are made through buying auctions, under specific legislation. However, before finalizing sales, Cemig submits them for approval to its Energy Risks Management Committee (CGRE), which has members from various areas of the company, and assesses whether the transaction will be advantageous, and meet certain set commercial guidelines – and finally to the Executive Board for decision. The greatest risk in management of these clients, since they involve high amounts, is default, in spite of the financial guarantees sought and received. To mitigate this risk, sales are preceded by a very painstaking credit analysis, as well as a rigorous control and monitoring of companies' default and financial health.



Because of the complexity of transactions, Cemig has personalized relationship channels specifically for corporate clients – which require wide knowledge of the industry’s regulations and the rules governing Free Market transactions:

## Corporate client relationship channels

Market segment	Relationship channel	How publicized to clients
Final consumers (Manufacturing)	Relationship agent (phone, e-mail, meetings)	Direct contact
Basic industries, Agribusiness, Electricity-intensive industries	Corporate events	Agent, site, email
	Cemig site	Agent and email
Special clients'	Training	Agent and email
Wholesale (Distributors, Generators and Traders)	Telephone contacts, email, specialized journals and sites, Cemig website, business visits, and participation in associations of market agents, such as: Abraceel, institutions and government bodies.	Through the trading agent

## RELATIONSHIPS WITH CONSUMERS

### DMA

Cemig rates its relationships with consumers as important enough to be part of strategic management. It monitors consumer relations using the Balanced Scorecard (BSC) method – which translates strategy into maps with objectives, indicators, goals and initiatives. The points on the strategic map with focuses on consumer service and satisfaction activities are evaluated using indicators, with goals that aim to improve performance. They measure:

- performance of the client service channels: waiting time; service level of the call center; duration and frequency of complaints; clients’ assessment of in-person customer service;
- performance of the electricity system: duration and frequency of outages, performance on critical days;
- client satisfaction in relation to the services provided; and
- an index that measures the population’s perception of trust and safety in relation to the electricity system.

Actions plans are created for the indicators. They aim for continuous improvement in consumer service and satisfaction, preempting and/or mitigating the risks involved in the relationship, especially those relating to client dissatisfaction. Non-compliance with regulatory requirements can led to legal actions via local Consumer Protection (Procon) offices or the Public Attorneys, or fines applied by these bodies and/or Aneel; or damage the Company’s image.

The commitment to consumers can be seen as measured by the Aneel Consumer Satisfaction Index (IASC) which is linked to one of the objectives of Cemig’s strategic map, in the market perspective. This index functions as a thermometer of clients’ perception about Cemig’s services. This makes engagement with client satisfaction by every person in the Company a necessity; and for this reason, Cemig includes the result of this indicator as a direct influence on employees’ variable remuneration.



# CONSUMER SATISFACTION

DMA

PR5

Consumer satisfaction is inherent in Cemig’s culture. All employees are responsible for it. This stance contributes to:

- compliance with regulatory quality indicators, supply continuity, client satisfaction;
- recognition by satisfaction surveys – two important examples are: the Residential Consumer Satisfaction Index (IASC), a survey by Aneel, and the Perceived Quality Satisfaction Index (ISQP) by the Brazilian Electricity Distributors’ Association (Abradee); and
- increase in the value of Cemig’s brand – preservation of its high reputation in its markets.

In 2017 Cemig was a finalist in the IASC Awards, in the category ‘Utilities with more than 400,000 consumer units in Brazil’s Southeast’. Cemig’s IASC score was 65.75, an improvement of 2.67% on 2016: this was higher than the average for all Brazilian concession holders (score 63.16) and the average of 63.14 for its category (‘>400,000 consumers, Southeast’). The target for this indicator is 70.0.

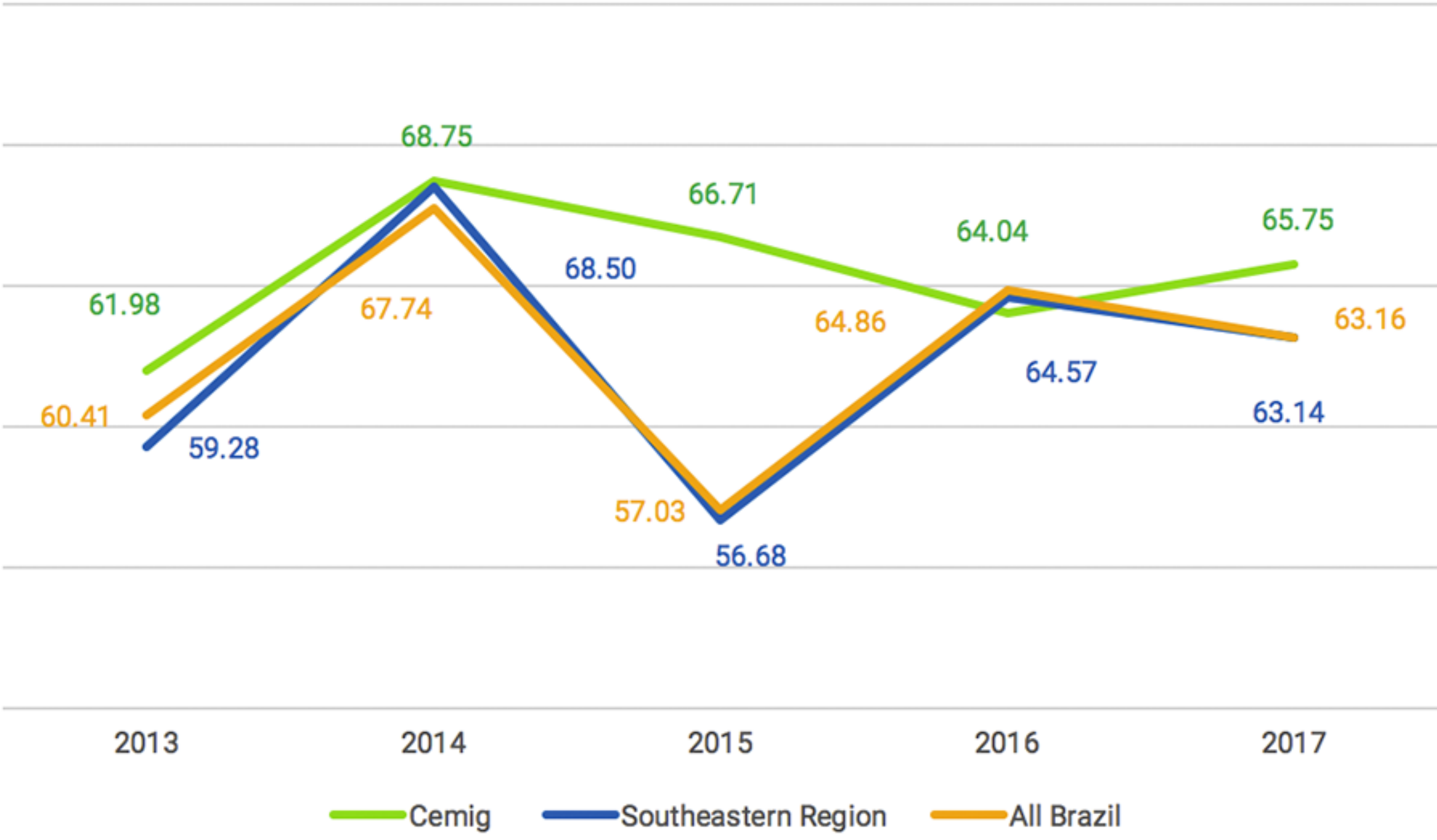
Cemig’s score placed it third in the 10 largest electricity distributors in the Southeast region; and it rose 11 positions in the Brazil-wide IASC ranking – a total of 68 participating distributors – from 2016 to 2017.

The IASC and ISQP indexes are important tools that support and motivate Cemig’s efforts for continuous improvement of services.

With this 2.67% year-on-year improvement, Cemig contrasts with the trend for distributors in the Southeast region – they historically used to score highly in client satisfaction, but their score has fallen by 10 percentage points on average. The average IASC score for the whole of Brazil fell by 2.63% from 2016 to 2017.

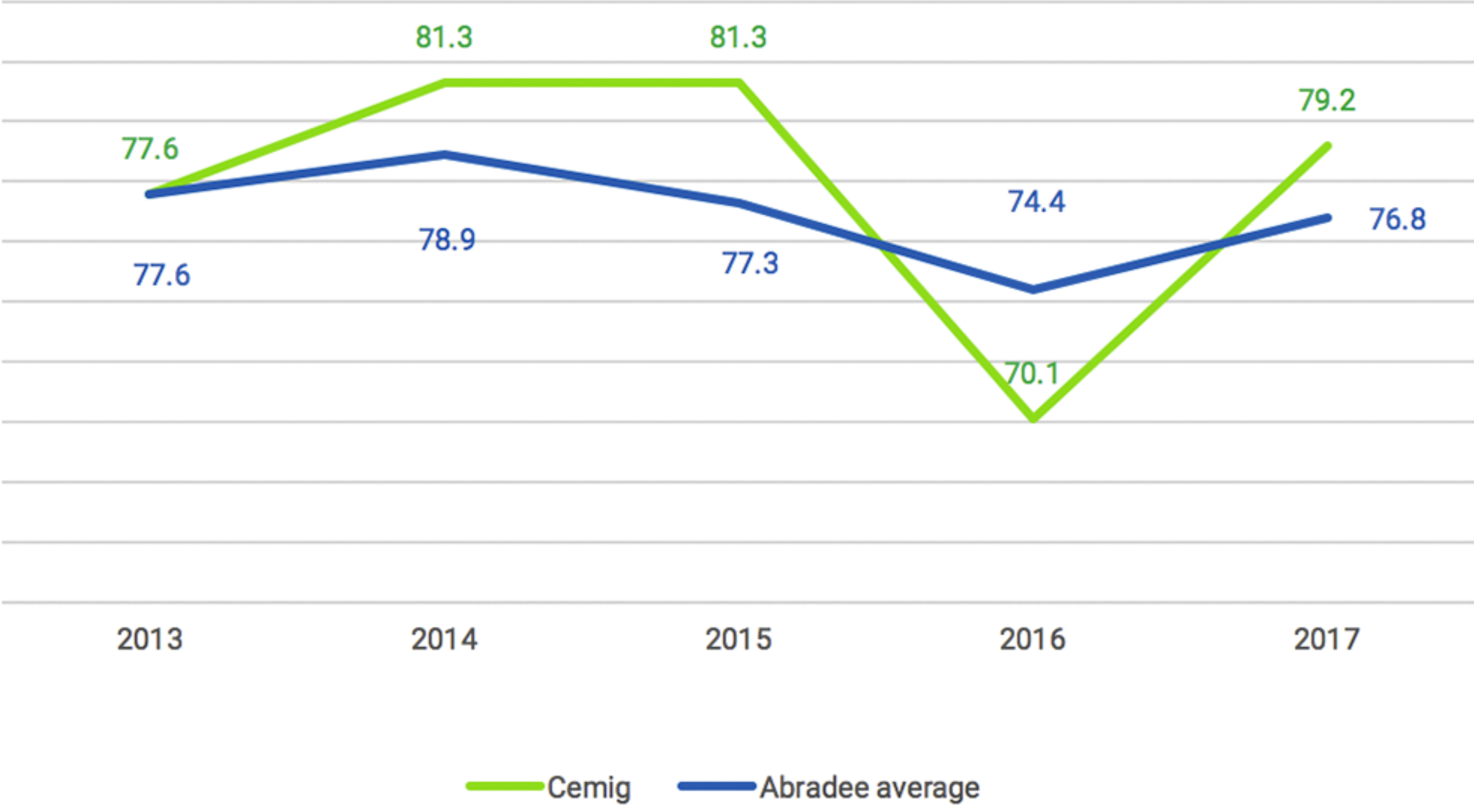
Cemig’s improvement in the context of falling figures for its region is an indication of the assertiveness of its actions to improve this indicator.

## IASC



In the ISQP – Perceived Quality – Index, Cemig was among the 3 highest-placed electricity distributors with more than 500,000 consumers in the Southeast, which Abradee researches with residential consumers:

## ISQP



Cemig’s score rose by 9.1 (i.e. by 13%) from 70.1 in 2016 to 79.2 in 2017. Two other client approval indexes also showed very significant improvement from 2016 to 2017: the IAC (Consumer Approval Index) – up 18.7 points from 2016; and the ISG (General Satisfaction Index), up 23.3 percent from 2016.

This continuous work on improving client satisfaction over the year 2017 focused on proximity, operation improvement and communication. Special effort went into three communication channels: ‘Coffee with Housewives’ (Café com Donas de Casa) the ‘Theater of Light’ (Teatro de Luz), and ‘Cemig and You’ (Cemig e Você).

Cemig allocated resources in efforts to facilitate people’s lives, investing continuously in new technologies and improvement of the performance of the customer care channel. Examples are the Cemig Atende app, available for smartphones and tablets; the Virtual branch on the Cemig Atende site; and service via Facebook and other online channels, providing improved comfort and security to clients and allowing them to save time on business with the Company. Another successful initiative was the Debt Negotiation Campaign, enabling clients to settle overdue bills on negotiated terms. A special channel, made available via the Call Center, held more than 147,000 interactions with customers during the periods of the campaign.



We are all responsible for the good service  
Customer Week

Simultaneously, to help make employees and outsourced workers aware of their responsibility and their contribution in the process of client satisfaction, internal campaigns were adopted such as #somostodoscemig (‘We are all Cemig’), and Internal Client Week (Semana Interna do Cliente), which encouraged reflection on the importance of client satisfaction.

The declining level of current satisfaction in the rest of the market – other than Cemig – in the Southeast, as shown by the 2017 IASC survey, increases the challenge of ensuring quality services, delivered within appropriate periods, to continue providing satisfaction to Cemig’s more than 8 million consumers.

To achieve this Cemig has been working on numerous areas:

- Continuous monitoring of the market to anticipate trends and enhance client segmentation in comparison with competitors.
- Constant employee training, strengthening trust, client loyalty and retention.
- Expansion of the range of services offered in online channels.
- Work on improvement of power service, through the Distribution Development Program (PDD) which, among other aims, seeks to reduce frequency and duration of outages.

## RELATIONSHIP CHANNEL

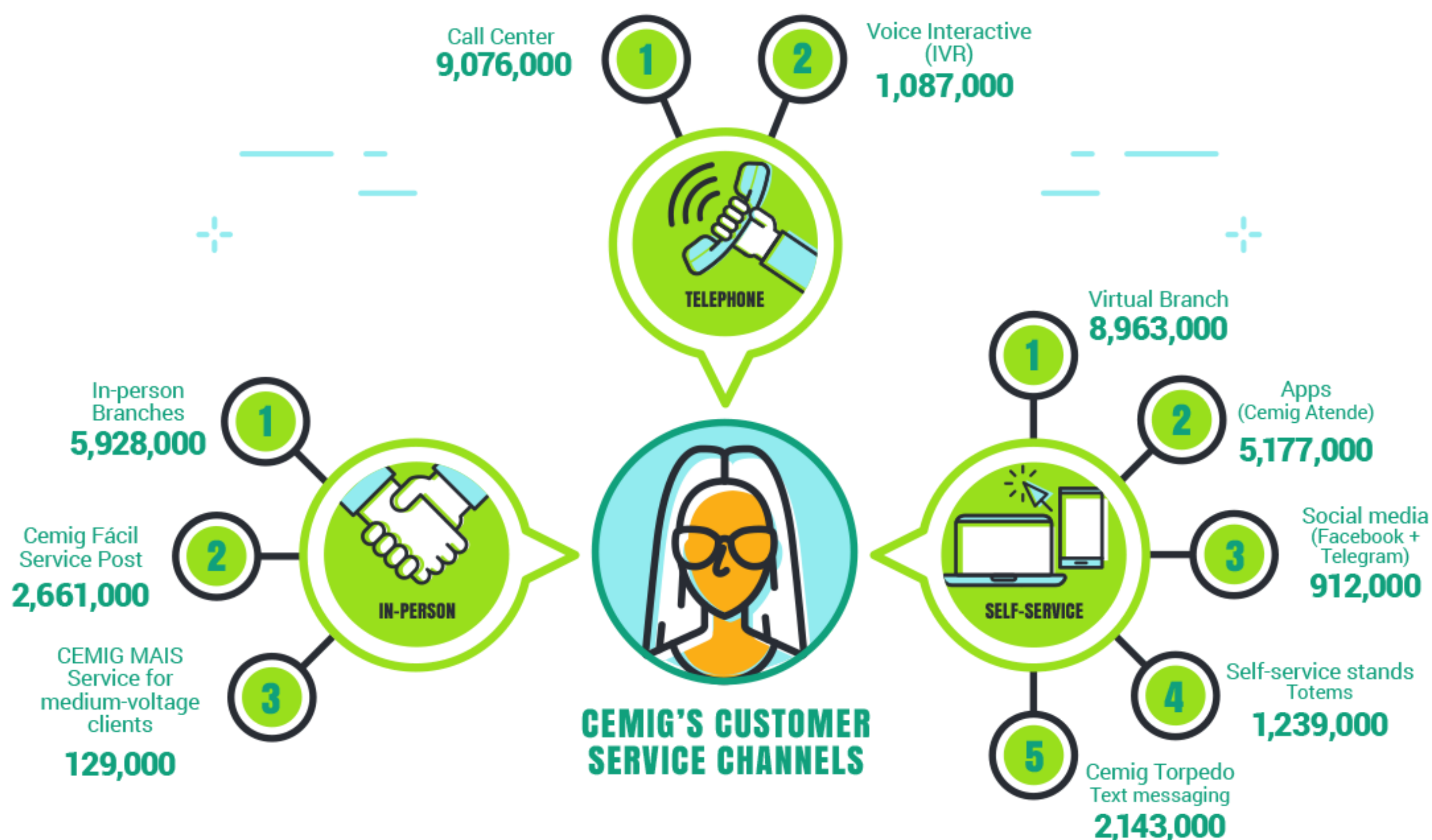
Due to the vast scale of Cemig’s concession area, with presence in 774 municipalities (most of them rural areas equivalent to ‘counties’), diversity of relationship channels is an essential resource for providing a quality client service to consumers. Thus Cemig is continually focusing on getting closer to consumers and strengthening this relationship, offering a fast and up-to-date service with quality and transparency.



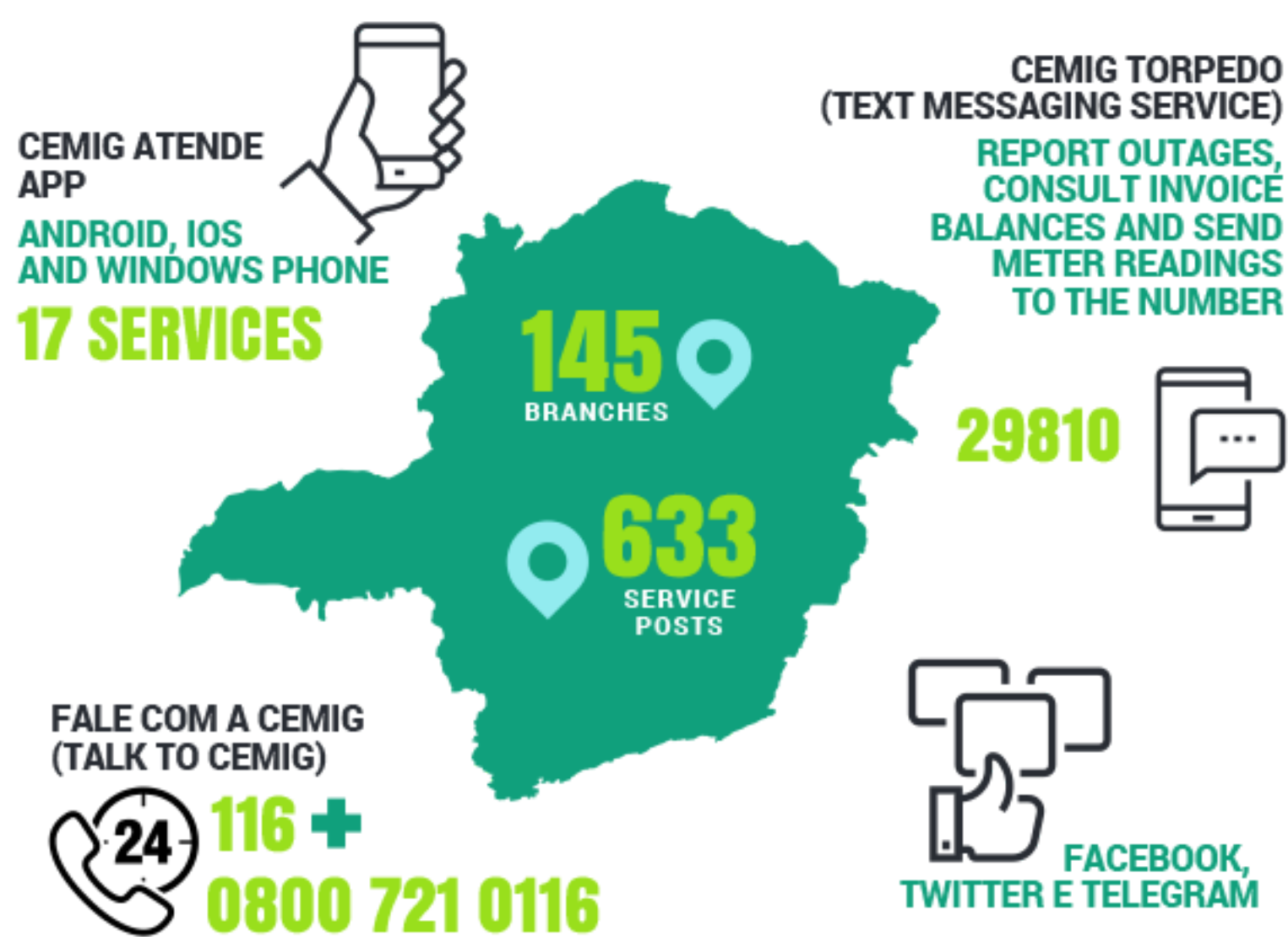
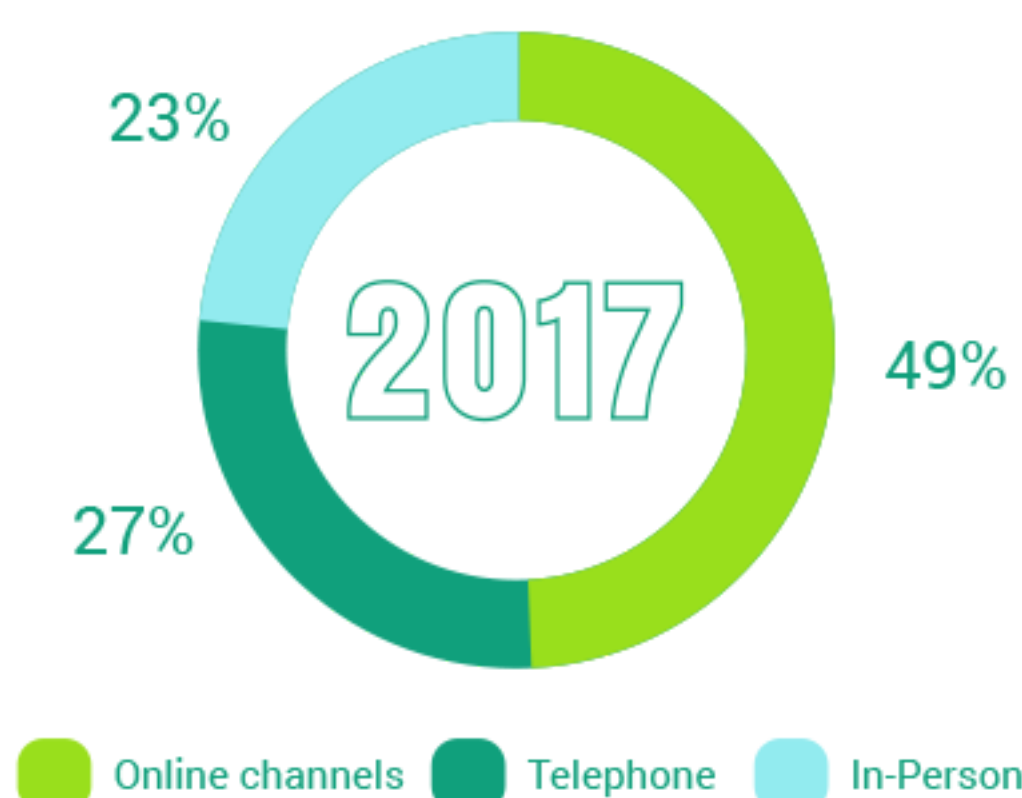
**8.3 MILLION**  
CLIENTS



**37,393,144**  
SERVICE REQUESTS/2017



### REPRESENTATIVENESS OF USE OF CUSTOMER SERVICE CHANNELS



Complementing this mix of customer service channels, Cemig also has its Consumers Council, which represents and defends collective interests, making suggestions, cooperating in inspections, and bringing forward complaints or reports to Cemig, based on general conditions of electricity supply. In 2017 this Council held five ordinary meetings, four regional meetings – in the municipalities/counties of Santa Maria de Itabira, Araxá, Unaí and Curvelo – and two extraordinary meetings with representatives of all the consumer categories. Main themes discussed included: renewal of concessions; distributed generation; meter reading and bill delivery procedure; the auction of generating plants; improvement of a draft proposal for regulations to regroup distribution concession areas subject to common company control; and timetables for plans of works. Members of the Council also took place in seminars, meetings and events of Aneel, on Smart Grids, FMASE (Power Industry Environment Forum) and FASE (Forum of Power Industry Associations). Cemig's Chief Distribution and Sales Officer took part in the last meeting of the year.

Clients with special needs: Cemig is concerned to provide the best possible customer service and interaction for clients with special needs, through its customer service channels such as: Fale com a Cemig (0800 723 8007); the SMS channel Cemig Torpedo; the online channels; and the Cemig Atende app. All these channels have special service for the hearing-impaired. The online channels can be used by people with special needs through adapted equipment and software. The customer service branches have full facilities for the disabled, in accordance with ABNT-NBR 9050) accessibility standards.

Some highlights in 2017:

- **The ‘Você’ (‘You’) Automated Branch:** Inaugurated on March 17 in the Minas Shopping mall, in Belo Horizonte, this new branch is the result of an R&D project funded by the Cemig-Aneel R&D program. It is a pioneer concept in public services, to provide quality customer service taking into account clients’ different physical needs with full interactive digital technology. Innovations include a customer service interface for clients who are visually, hearing or mobility challenged, with specially adapted design of the equipment and the concept of the branch environment.
- **Updating of the ‘Virtual Branch’:** Greater accessibility and autonomy for clients; parameter-based services; login via Facebook or Google; and a more intuitive site with fewer screens, capacity for attaching documents integrated with management systems, and other facilities.

The customer service channels are managed at a macro level, with monitoring and control through Contact Panels and Service Records, enabling all customer service contacts made through all channels, and their quantities, to be checked on an overall or regional basis. Figures on service through branches are also monitored – for example waiting time, average time of a consultation, and quality of service provided. Telephone customer service is also monitored in real time by a system enabling management of volume of calls entering the call center, helped by a control panel of long-distance calls received.

A tool for Distribution Operations Management was developed in 2017. This has a panel showing: activity of client contacts, by channel, by service, and by regulated service; delays; complaints; compensations; engagements of the Ombudsman; and the management indicators required by Aneel and the actions of the Results Plan. This plan, with action targets and a timetable, aims to adapt the electricity distribution service to all the sector regulations, especially those relating to commercial service deadlines, supply quality, and safety for the workforce and the public.

These and other systems for monitoring customer service, and quality of the communication channels, help in the continuous effort to improve customer relations.

## Ombudsman

HR12   G4-57

Cemig’s Ombudsman was created in 2004, to provide post-service responses to reactions from consumers and clients, aiming for solutions in accordance with legislation, within appropriate timeframe, with transparency, respect and quality.

The Ombudsman’s office is a second-instance customer service channel, and does not provide any direct commercial services. Complaints can be registered if the subject matter has already been submitted to one of the first-instance customer service channels and has not been dealt with, or been dealt with in an unsatisfactory manner, or beyond the related deadline. Under Article 201, § 1 of Aneel Normative Resolution 414/2010, the Ombudsman has a duty to respond within 15 days.

[Click here](#) to see all of Cemig’s first-instance customer service channels.

The Ombudsman’s office can also be activated to record suggestions, praise, or accusations relating to the Company’s services and products.

In 2017, Cemig’s Ombudsman received 28,559 submissions, which were classified as information, complaints, accusations, suggestions and praise, as follows:

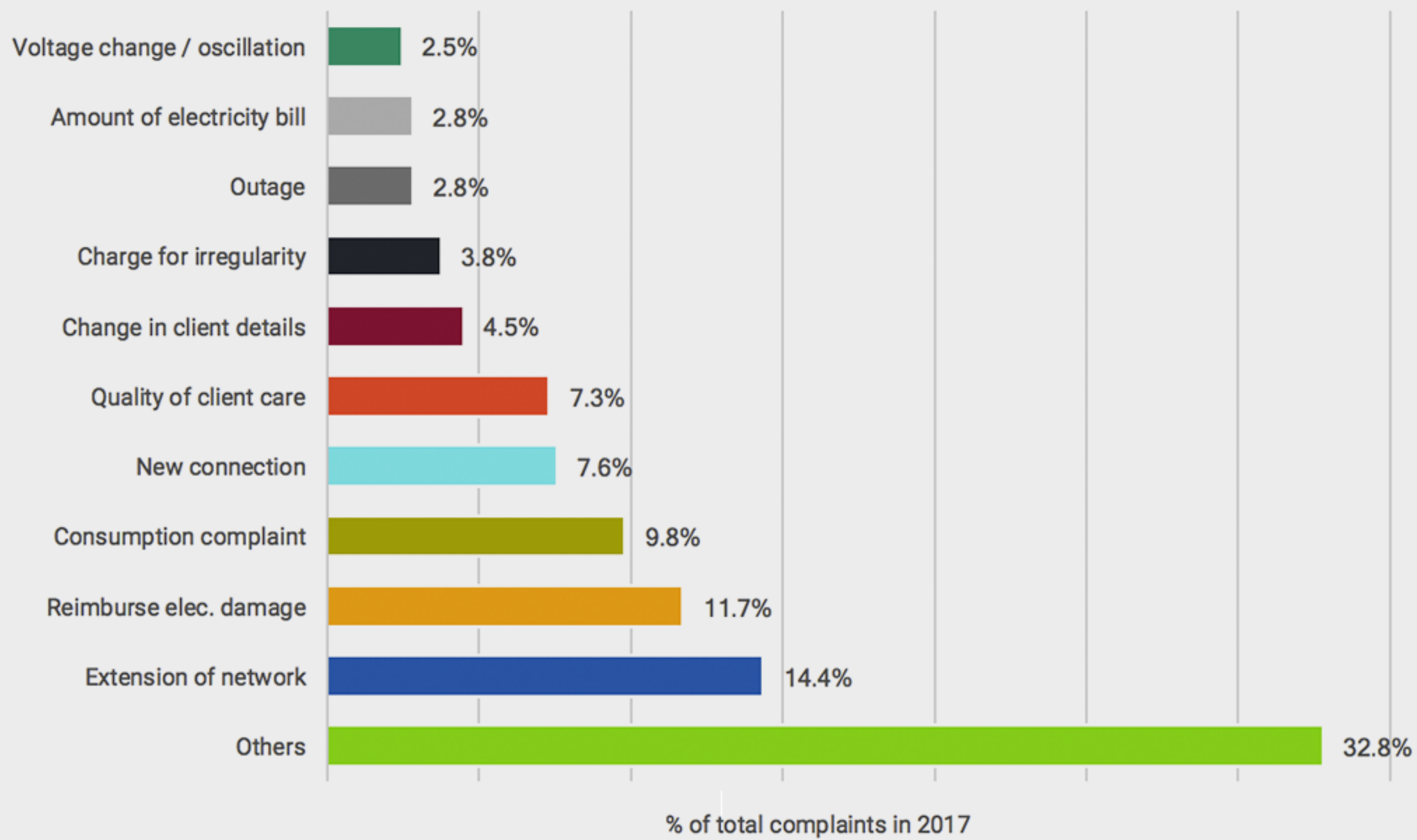
Communications to Ombudsman in 2017				
Information	Complaint	Accusation*	Suggestion	Praise
13,339	13,906	1,253	33	27

\*Accusations, related to consumer relations, e.g.: clandestine connections to power supply, invasions of power line pathway, etc.

There were 7.77% more complaints in 2017 than in 2016. Of the total, 7,013 were finally rejected, and 6,893 accepted: of these, 6,614 were concluded in 2017, and 279 are at the phase of conclusion. This chart shows the percentages for the different types of complaints received:



## Top issues of complaints in 2017



One important statistic is that there were no complaints to the Ombudsman involving the subject of human rights during the year.

The incoming channel most used for complaints was the phone, followed by subjects submitted the Ombudsmen of Aneel, internet (web and email), in person and by letter/fax.

Ombudsman service channels		
Channel	Complaints	%
Phone	6,101	43.87%
Aneel	5,357	38.52%
Internet	2,396	17.17%
In person	53	0.38%
Letter/Fax	7	0.05%

These figures are for the total of all communications between Cemig and the consumer, or directed to the Ombudsman of the Brazilian nationwide regulator, Aneel. These contacts are classified as either ‘provision of information’, or ‘cases’. Information is provided immediately. ‘Cases’, however, refers to statements received and submitted to the areas responsible after which the consumer receives correspondence with the result of the request.

This flow of treatment for consumer complaints has been standardized by Aneel, and is referred to as the Caminho do Entendimento or the ‘Route of Understanding’. Aneel chose Cemig to run the pilot project for its implementation; Cemig has been applying it since 2014. The flow is as follows: the first contact is with the distribution company’s customer service channels; if this does not provide a solution, the consumer may complain to the distributor’s Ombudsman; and finally if the problem persists the complaint can be registered with the Ombudsman of Aneel.

There is more information on the Aneel consumer orientation site:

<http://www.aneel.gov.br/como-registrar-a-sua-reclamacao>

Aneel Ombudsman Award (SMA/Aneel Technical Note 11/2017)

The rating involved covers items relating to technical content and the structure of the Ombudsman’s office concerned.

The aim of the award is to:

- identify and give visibility to successful practices in meeting consumers’ demands, helping increase support from public opinion for strengthening Ombudsmen;

- motivate improvement of electricity services, and treatment of complaints by their users;
- provide comparison indicators by region and size of company – a positive benchmarking; and
- enable concession holders to plan, and Aneel to monitor, measures for improvement of meeting consumers’ demands.

The award:

The award will take the form of a certificate, a trophy and Ombudsman Seal of Excellence – which can be used on the Company’s electricity bills and in printed/media material – one more distinguishing factor to stimulate the industry to improve services to clients.

The Ombudsman Panel

A management tool called Ombudsman Panel was put in place in 2017. It contains information such as the number of complaints, the subjects causing highest demand, the areas of the Company with the highest incidence of complaints, numbers of cases pending and concluded, and the most demanded customer service channels. It also shows the number of cases by region and even by city. The enhanced management of consumers’ complaints, also improves analysis, and thus the Ombudsman’s performance.

This Technical Note issued by Aneel in February 2017 defines a method for ascertaining the quality of Ombudsman services, and establishes a ranking for the Aneel Ombudsman Award, for all the holders of electricity distribution concessions.

NON-COMPLIANCE

EU27

The Company began the year 2017 with the challenge of tackling record non-compliance in 2016. The unfavorable macroeconomic scenario, with high unemployment rates, can be considered as one of the main causes of higher receivables. The strategy for recovery of billed and unpaid amounts was intensified in 2017. An additional budget was made available in an attempt to recover recorded revenue losses.

The current non-compliance tackling measures have already shown some results. Since December 2016, the company stopped presenting a considerable increase in the default percentages, showing a stagnation and control of the indices. Hence, a more consistent fall behavior is expected. Comparing the default rate measured in December / 2016 and December / 2017, one can see a drop in the rate of 12.65%. The rate calculated in December / 17 was 5.20%.

Despite this, the number of disconnections in 2017 was significantly higher when compared to 2016, especially for those whose duration of the disconnection was over one year, due to the historical growth of debtors and, consequently, the need to strengthen the fight to default.

Duration of disconnection	Number of disconnections
< 48 hours	300,107
48 hours – 1 week	73,668
1 week – 1 month	58,027
1 month – 1 year	67,118
more than 1 year	348,029

Reconnection time after payment	Number of reconnections after payment
< 24 hours	538,525
24 hours – 1 week	64,848
more than 1 week	280



The Company uses various tools of communication and collection to prevent increase in default. Measures used include contact by telephone, email, and text message, collection letters, negative credit postings with credit agencies, collection through the courts and, principally, disconnection of supply.

To further reduce the number of debtors, in November Cemig launched its Debt Renegotiation Campaign, offering terms for payment and installments. A specific 0800 Call Center number was set up for clients to negotiate by phone. An in-person facility was created in the city of Belo Horizonte exclusively for these negotiations. Up to December, this produced revenue of R\$ 65.3 million – R\$ 17.13 million paid at sight and R\$ 48.2 million by installments.



Juscilene Batista, attendant, Bevilha Pereira dos Santos Bishop and his granddaughter Helen Eduarda Bishop. Service sector of Cemig's Cidade Industrial agency, Cidade Industrial-MG, Brazil.

## SAFE USE OF ELECTRICITY

PR1 PR3 PR4 PR7 EU25

There are of course no labeling requirements for electricity – but Cemig invests in communications on safe use of electricity, both through campaigns in the media and by providing multiple relationship channels that offer information to consumers. Cemig’s teams also provide physical checking and orientation to consumers in the field, on risk situations, when necessary. All Cemig’s communications obey the recommendations of the Brazilian Corporate Communications Association (Aberje); its advertising agencies obey the Brazilian Advertising Self-Regulation Code, established by the Brazilian Council for Self-Regulation in Advertising (Conar). There were no cases of noncompliance with the voluntary regulations and codes on communication and marketing in 2017.

As well as the constant concern for its workforce, Cemig takes measures and runs campaigns for prevention of accidents to the public in the whole of its concession area, providing direct orientation through lectures, posters, calendars, and reports on radio and TV of all the broadcasters (with state-wide, regional and in some cases national reach).

The direct presentations were given in relation to building works, schools and several companies. Online educational material was widely disseminated over the whole year on Cemig’s website and through social media.

[The Company’s website](#) has some of the campaigns, bulletins, magazines, booklets, games, and content in other formats, on safe use of electricity. The number of accidents involving the general public in Cemig’s concession area in 2017 was 15.62% lower than in 2015:

	Year		
	2015	2016	2017
Number of accidents involving the public *			
Accidents without fatalities	73	56	64
Accidents with fatalities	23	25	20

In December 2017, there were 300 legal actions in progress for accidents to the public, involving fatalities and injuries in connection with assets owned by the Company. Judgment was given on 41 of these in the year.

\* Figures from 2015 have been corrected



# INFORMATION SECURITY

PR8

Cemig continues to be aligned with best market practices in information security, and operates with other companies in work groups to enhance this aspect. In November 2017 the Data Security Task Force was created for the Operations Center, plants and substations of Cemig GT (Generation and Transmission). The group aims to increase the level of protection of the supervision and control network of the Operations Center, and Cemig’s facilities to avoid any cyber-attacks and if necessary react to them effectively.

Cemig responded promptly to the biggest cybernetic attack in history – known as WannaCry – and suffered no impact or interruption of its services. All the Company’s servers have been updated; various protection methods have been adopted under coordination of the IT team and the Cybernetic Safety Incident Response Team (CSIRT). Numerous measures have also been adopted to strengthen, control and monitor the system, increasing network safety.

Cemig manages its Information Security Policy as a process of continual improvement, updating it in accordance with its business processes, and in compliance with the applicable legislation, especially the Sarbanes Oxley Law (SOX).

There were no events relating to violation of privacy or loss of clients’ data in 2017.

All the client data used for access in the client service channels follow standard information security protocols, specifically to avoid violation of privacy or loss of client data – obeying the company’s information security policy and several internal instructions for procedures and forms of control. Cemig also produces bulletins and holds safety campaigns addressed to employees. Cemig makes no commercial use of its clients’ data.

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Cemig’s information safety campaign in 2007 dealt with the themes of safe behavior, and ethics – aiming to raise the awareness of the workforce on good information safety practices. Also to emphasize the theme, the Company published bulletins and held lectures, as well as the 15th annual corporate seminar Up To Date with Information Security.

Cemig’s Information Security Survey report, and its Information Security Indicator (ISI) reflect the present stage of management of information security risks in the Company. In the 13th annual survey, 3,065 employees participated. The ISI score in 2017 was 81.91 – higher than the 2016 result, of 70.83. The survey provides a measure of the maturity and compliance of the Company’s information security risk analysis, in comparison to the market and legislation.

# ACCESS TO ENERGY

DMA

EU26 SDG7 SDG11

## Client inclusion initiatives

Cemig’s **Rural Electrification Program** aims to bring high-quality electricity supply to the entire rural areas of the 774 municipalities of its concession area by August 2018. (‘Municipality’ is the formal name but in Minas Gerais they are mainly large rural areas – so can be thought of as ‘counties’; the State of Minas Gerais is the size of France.) Approximately 50,000 connections will be made benefiting more than 200,000 people and achieving more than 99% electricity supply coverage – over the vast area of this concession.

This initiative is also part of the plan to combat countryside poverty, launched in 2016 by the Minas Gerais state government under the name Novos Encontros. In 2017 a total of 21,502 connections were made, for a target of 21,796 new clients to be served – at the end of the year 480 municipalities (/counties) had been regularized, or 98.6% of the planned target. The plan for 2018 is to connect a further 15,674 consumers by the end of August. As well as attending the consumer by providing the network, Cemig also offers a basic internal installation kit, free of charge, with a standard entry, branch connection, lamps and plugs. To qualify, the beneficiary has to be on the federal government’s ‘Single Registry’. This is a listing of those earning low income and thus entitled to certain benefits.

In 2017 the area with the highest number of new connections was the Eastern Region of the state, with 6,789 new countryside connections, for a total investment of approximately R\$ 60 million. The plan is to connect a further 4,899 rural consumer units in 2018, for investment of approximately R\$ 78 million in the region.

In the whole of the Rural Electrification Program a total of 15,000 kilometers of network will be built – equivalent to laying a cable almost half-way around the world – with 40,000 transformers installed, and thousands of electricity poles.



# Energy conservation and efficiency

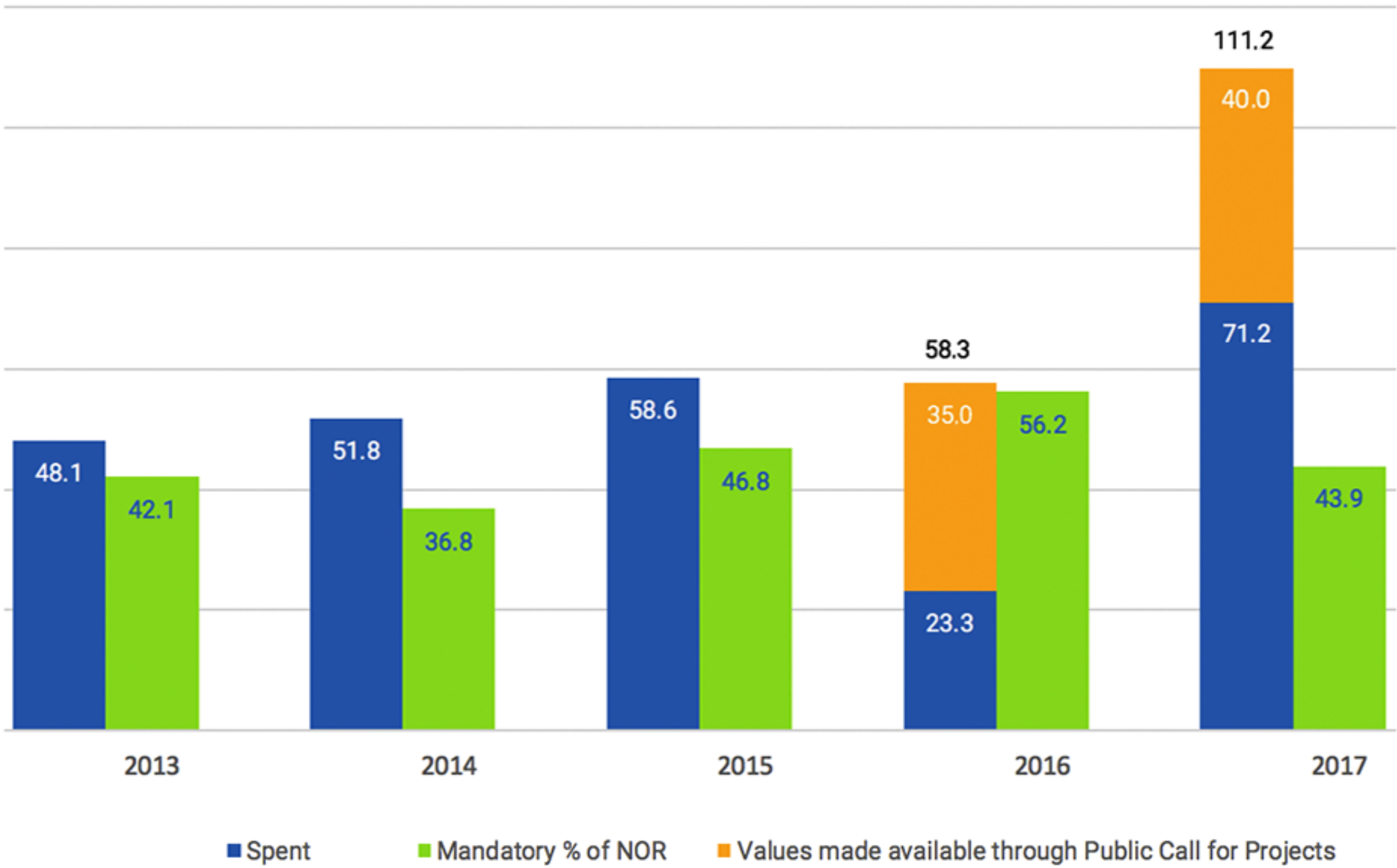
SDG17

Through its *Energy Efficiency Program*, Cemig has been running projects to orient the population on proper use of electricity since the 1980s. Since 2008 approximately R\$ 500 million has been invested in putting new technologies in place, and strengthening the culture of rational use of electricity through activities to enhance awareness, and the use of more efficient equipment.

Under current legislation, Aneel regulations require distributors to invest a minimum percentage of Net operational revenue in energy efficiency projects; and also to publish an annual Public Call for Projects, giving the general public the opportunity to present proposals to be carried out with the funds of the Energy Efficiency Program. Cemig has been issuing this annual Request for Projects since 2015.

In 2017 it made R\$ 40 million available for these projects – 14% more than the R\$ 35 million made available in 2016. In total, 73 proposals were received, of which 22 were approved. These projects go through a process of signature of contract and are planned for execution in 2018. Cemig further invested R\$ 71.23 million of its operational revenue in the Energy Efficiency Program – three times more than in 2016. This reflects the moving of some 2016 projects into 2017, either due to the distribution company’s shortage of available cash, or delays in tender processes. This chart shows investment in the Energy Efficiency Program in the last five years:

## Investment in the Energy Efficiency Program (R\$ million)



The program invests in projects in various sectors of the economy – industry, public authorities, public services, and residential. Highlights in 2017:

**Electric showers replaced by direct solar heating in low-income housing developments**

This benefit was provided to 4,315 families living in low-income housing projects – also replacing 21,575 lamps – for a total investment of R\$ 10.94 million in 2017. Energy savings now total 4,101 MWh/year, with reduction of 1,673 kW in peak demand.

**Service to low-income communities**

While including visits and events to raise awareness, this project replaced equipment in low-rental communities. A total of 68,515 families received this support in 2017; 442,260 inefficient lamps were replaced with LED technology, and 2,865 refrigerators were replaced. In 2017 the project saved 5,392 MWh, and reduced average peak demand by 2,466 kW.

**Obsolete lighting replaced in public schools**

Installation of more efficient lighting in 18 schools saved approximately 348 MWh in 2017, reducing peak demand by 56 kW, for investment of R\$ 1,049,300.

**Co-generation with animal feed producer**

This is a joint project with the animal feed producer Patense (located in Patos de Minas), to install a steam-based co-generation system to qualify under Aneel efficiency standards, aiming to save 12,232 MWh/year, reducing peak demand by 627 kW. Investment in 2014–17 has been R\$ 16.6 million.

**Projects started in 2017**

Various projects funded under the program were begun in 2017 and have not yet delivered products. Two highlights under the 2016 Public Call for Projects are the Solar 1.0 pilot project, and the illumination of the Liberty Palace in Belo Horizonte. Together, these accounted for investment of R\$ 7.78 million in 2017.

**Electric showers replaced with direct solar heating at elderly people’s care homes**

This project aims to install 20,800m² of solar collectors at 508 care homes in Minas Gerais. A total of 56 systems were completed in 2017, saving 845 MWh in the year, for investment of R\$ 433,900, and reducing peak demand by 374 kW.

**Electric showers replaced with solar in public hospitals, philanthropic institutions**

Installations were completed at 25 public and philanthropic institutions in 2017, generating savings of 1,891 MWh/year and reduction of peak demand by 4,579 kW.

**Bonus for replacing obsolete electric motors**

In this project Cemig offers to share the costs of replacing obsolete motors with the consumer. In 2017, 41 motors were replaced for investment of R\$ 229,800, saving consumption of 264 MWh/year.

**Performance contracts in progress**

Other performance contracts in progress include: co-generation in the company Bem Brasil; modernization of the lighting system of Minas Tênis Clube; and implementation of photovoltaic generation in (a) the plant of Algar Telecom, and (b) the two condominiums Village Paradiso I and II. Jointly these projects represented an investment of R\$ 27.55 million in 2017.



Energy Efficiency Program (PEE) – Figures for 2017						
Action	Target public	Units completed	Investment in 2017 (R\$)	Energy saved (MWh/year)	Reduction in peak demand (kW)	CO <sub>2</sub> avoided (tons)
Replacement of electric showers with solar water heating	Low-income housing developments	4,315	10,940,151	4,101	1,673	365
Service to low-income communities	Low-income communities	68,515	22,176,030	5,392	2,466	480
Replacement of electric showers with solar water heating	Long-term homes for the elderly	56	433,897	845	374	75
Replacement of electric showers with solar water heating	Public hospitals and charities	25	145,085	1,891	4,579	168
Replacement of obsolete lighting systems with high-efficiency systems	Public schools	18	1,049,270	348	56	31
Bonus for motor replacement	General public	41	229,858	264	1	24
Co-generation	Industry	1	54,722	12,232	627	1,089
Projects in progress	For-profit consumers	-	27,547,390	-	-	-
Projects in progress	Nonprofit consumers / proposals from public	-	7,780,235	-	-	-
Management plan	-	-	875,004			
TOTAL			71,231,643	25,073	9,776	2,232

See more info at: [http://www.cemig.com.br/pt-br/A\\_Cemig\\_e\\_o\\_Futuro/sustentabilidade/nossos\\_programas/Eficiencia\\_Energetica](http://www.cemig.com.br/pt-br/A_Cemig_e_o_Futuro/sustentabilidade/nossos_programas/Eficiencia_Energetica)

## The low income tariff

The Social Tariff is a legal requirement created by Law 12212 of January 20, 2010. Cemig complies fully with the legislation, giving consumers the full rights provided by the legislation. Residential consumer units are entitled to the discounted electricity tariff if they belong to families on registered on the federal government’s Single Registry social program (Cadastro Único), with registry updated in the last two years, or any person receiving the Continuing Social Assistance Benefit (BPC), under Articles 20 and 21 of Law 8742 of December 1993.

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The discount applies only to consumption up to 220 kWh/month, and is progressive: on consumption up to 30 kWh, the discount is 65%; from 31 to 100 kWh/month, it is 40%; and for 100-220 kWh, 10%. Indigenous families and residents of Quilombos receive a discount of 100% up to consumption of 50 kWh/month. In 2017, a total of 573,722 of Cemig’s consumers received Social Tariff benefits, with a total value of R\$ 184.15 million.

Information on how to request the benefit can be found at: [http://www.cemig.com.br/ptbr/atendimento/Paginas/tarifa\\_social.aspx](http://www.cemig.com.br/ptbr/atendimento/Paginas/tarifa_social.aspx)



For the Company, the program has a risk of delay in receipt of the government’s subsidy, affecting the distribution company’s cash flow. The subsidy amount is reimbursed monthly. Under Law 13360 of November 17, 2016 management of this account was passed from Eletrobras to the Electricity Wholesale Exchange (Câmara De Comercialização de Energia Elétrica – CCEE) from January 1, 2017, but the changeover took place only in May 2017.

In spite of this delay there was no delay in pass-through of the funds in 2017.

In 2017 there was another change: low-income residential consumers were exempted from inclusion of the annual CDE quota payment in their electricity bills.

## Distributed generation

*Distributed generation* means generation close to the location where it is used. It differs from the traditional model because it does not use the transmission system.

The concept is disseminating around the world, supported by opening of markets in electricity and oil. Environmental issues, and maturation of the technologies applied in this type of generation, are also encouraging its adoption.

Technologies used include:

- Generators (burning diesel, gasoline, ethanol, natural gas or biogas);
- Micro-turbines;
- Small-scale (horizontal or vertical) wind turbines;
- Small and micro hydroelectric plants;
- Fuel cell generators – and
- Photovoltaic solar panels.

### Management of access for micro and mini-distributed generation

Aneel’s Resolution 482 of 2012 set the general conditions for micro- and mini- distributed generation installations to have access to the distribution system on the offset-charge basis – enabling consumers to generate their own power from renewable sources, and provide the excess to the grid. Specific conditions for qualified co-generation and connections to the local distribution network were added from 2016 by amendment Aneel Normative Resolution 687/2015. If the unit generates more than it consumes, the consumer earns credits against future invoices. Under the new rules these credits are valid for 60 months – and can also be used to offset consumption of other units in the name of the same consumer at other locations when served by the same distribution company. This type of use has been called ‘remote self-consumption’ (autoconsumo remoto). Another innovation in Resolution 687 is the possibility of generation distribution in condominiums (of multiple consumer units) – allowing power generated to be shared between the condominium members in the percentages they choose. Aneel has also created the legal concept of ‘shared generation’, enabling various interested parties to form a joint consortium or cooperative, share the output of their micro- or mini- distributed generation facility, and receive credits on their individual future electricity bills. Small generators close to their loads can provide several benefits for the electricity system and concession holders:

- less urgency for investment in expansion of distribution and transmission systems;
- low environmental impact;
- improved voltage level during peak load periods;
- higher efficiency for the generating source due to lower losses in production and transmission;
- diversification of electricity supply sources;
- and the general benefit from development of new business models.

Potentially adverse effects could include:

- increased complexity and instability in network operation;
- difficulty in billing for use of the system;
- possible incidence of taxes; and
- a need to adapt distributors’ procedures to operate, control and protect their networks.

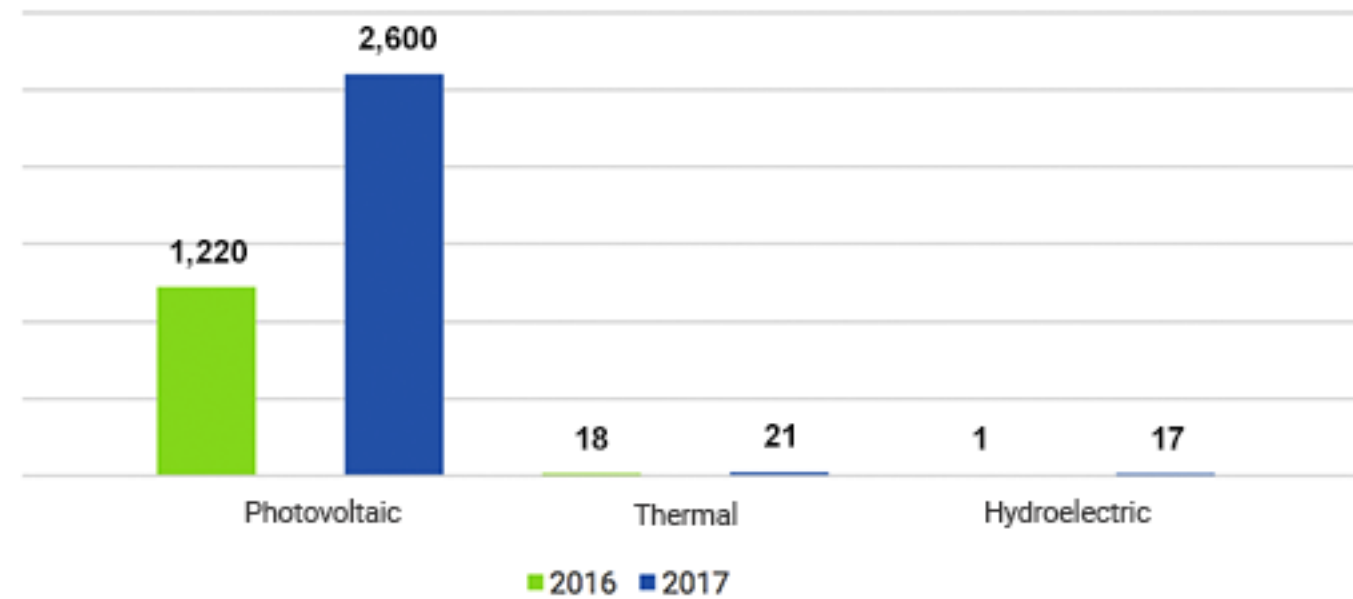
One solution to all this may be the Smart Grid – or an even more complex system involving integrated planning, envisaged as Smart City. In a pioneer role, Cemig connected the first electric power micro-generation unit in Brazil in September 2012, the year that Aneel created the offsetting regulations. Since then, it has led the Brazilian market in distributed generation connections.

Since Resolution 482 of 2012, by December 2017 a total of 4,217 generation units have been connected: 4,157 (98.55%) use photovoltaic solar generation; 43 (1.02%) use thermal generation (biogas); 17 are hydroelectric (0.40%); and one is a co-generation (biomass) facility. Their total installed capacity operating under distributed generation is 67.5 MW, or approximately 1.2% of Cemig’s present installed generation capacity.

These connections are predominantly – approximately 98% – low-voltage and photovoltaic. The charts below show growth from 2016 to 2017, by consumer type and source: predominantly photovoltaic, and residential – and both with growth of around 50% in one year:

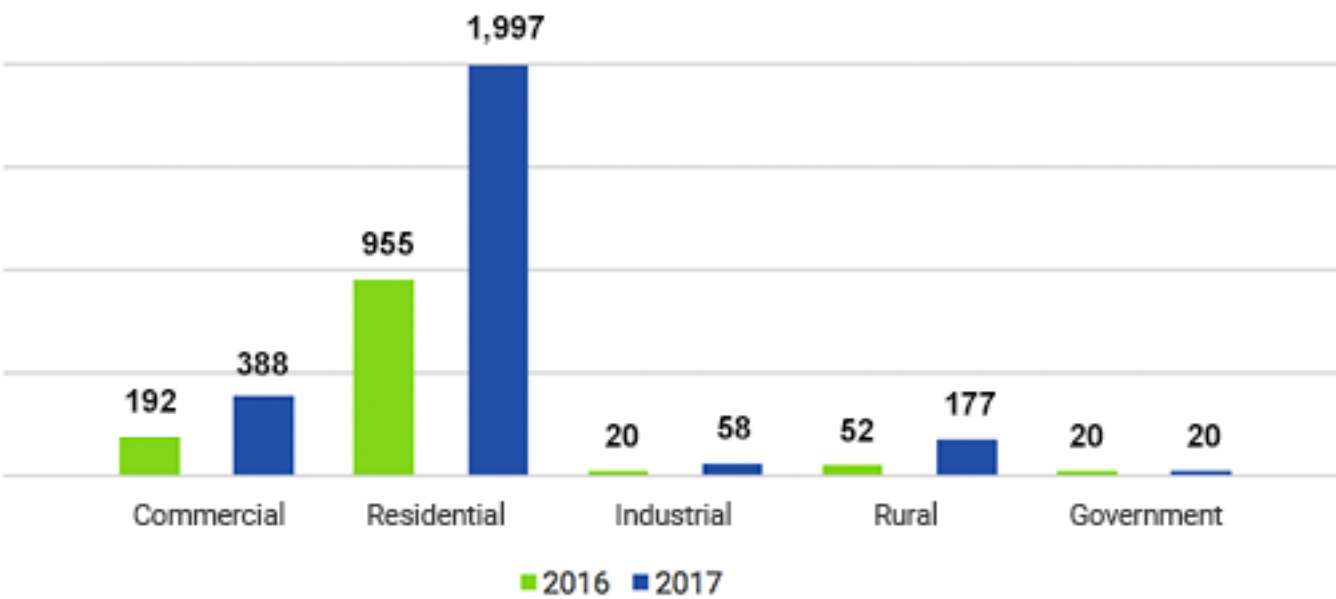
## Micro and mini-generation

Number of connections, by source



## Micro and mini-generation

Number of connections per consumer class



Cemig leads the ranking of Brazil’s largest distributors in distributed generation installed capacity. Volume practically tripled – from 16.5 MW to 48.5 MW – from 2016 to 2017. The next-ranked after Cemig has about one third of the volume (10.8 MW in 2016, and 10.9 MW in 2017).

There are more details on the regulations and the process of joining the offsetting system at this link:

[http://www.cemig.com.br/pt-br/atendimento/corporativo/Paginas/micro\\_minigeracao.aspx](http://www.cemig.com.br/pt-br/atendimento/corporativo/Paginas/micro_minigeracao.aspx)





Edimar Gonçalves de Souza, at the crane and Paulo Roberto da Silva Junior. Electricians of São Gabriel operational base.

# POWER SUPPLY TO THE MARKET

## CEMIG’S ELECTRICITY MARKET

G4-8EU3

The Cemig Group sells electricity through its distribution company, Cemig Distribuição (‘Cemig D’), its generation and transmission company, Cemig Geração e Transmissão (‘Cemig GT’), and other wholly-owned subsidiaries: Horizontes Energia, Sá Carvalho, Termelétrica de Barreiro, Cemig PCH, Rosal Energia, Cemig Geração Camargos, Cemig Geração Itutinga, Cemig Geração Salto Grande, Cemig Geração Três Marias, Cemig Geração Leste, Cemig Geração Oeste, and Cemig Geração Sul.

This market comprises sales of electricity to:

- i. Captive consumers in Cemig’s concession area in the State of Minas Gerais;
- ii. Free Consumers in the State of Minas Gerais, and other states, in the Free Market (ACL);
- iii. other agents of the electricity sector – traders, generators and independent power producers, also in the Free Market;
- iv. Distributors, in the Regulated Market (ACR); and
- v. the sector’s Wholesale Exchange (CCEE).

In 2017 the Cemig group sold a total volume of 55,276,770 MWh, which was 0.6% less than in 2016.

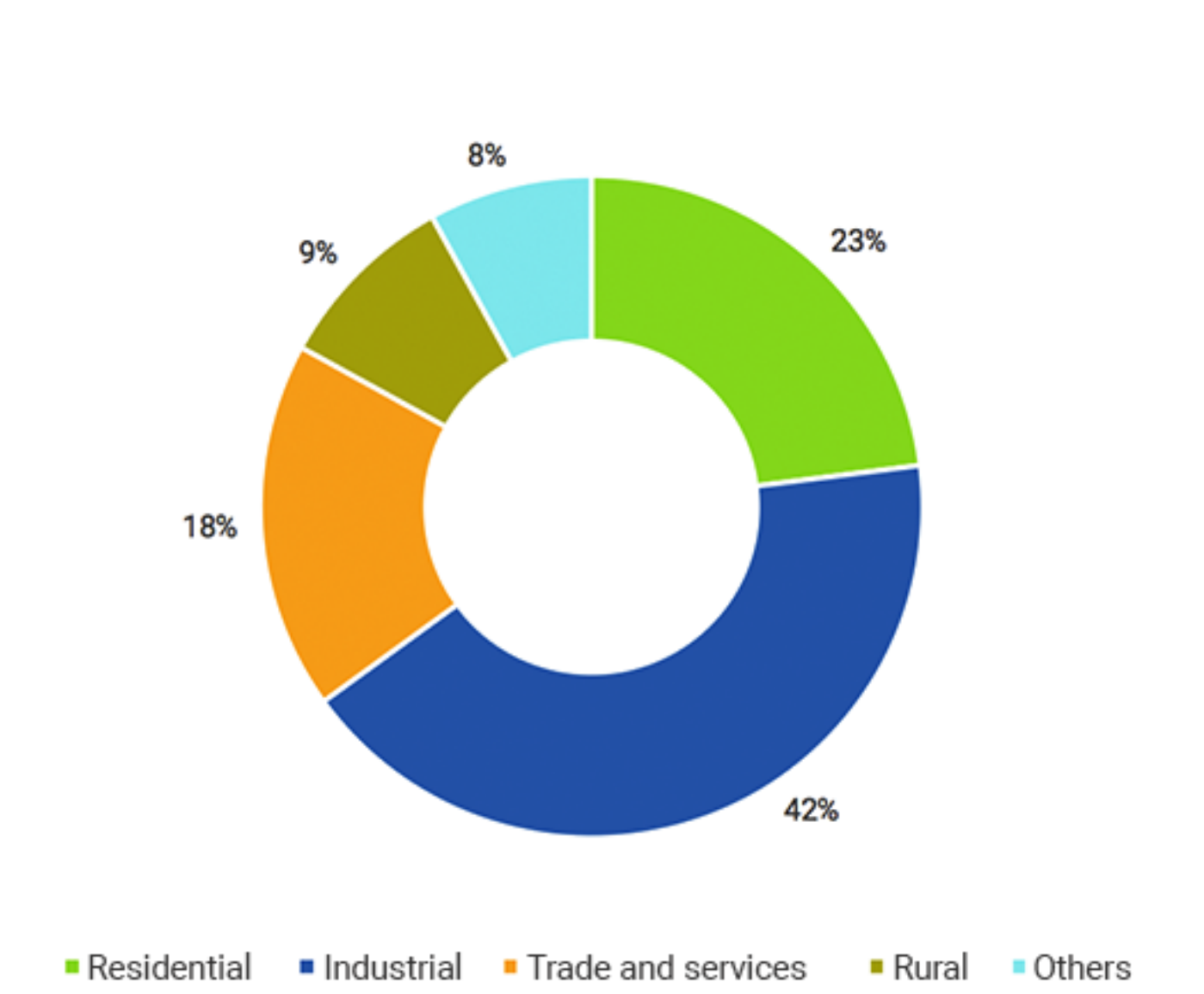
Sales of electricity to final consumers, plus Cemig’s own consumption, totaled 42,499,365 MWh, or 1.4% less than in 2016.

Sales to distributors, traders, other generating companies and independent power producers in 2017 were 12,777,405 MWh, or 2.2% more than in 2016.

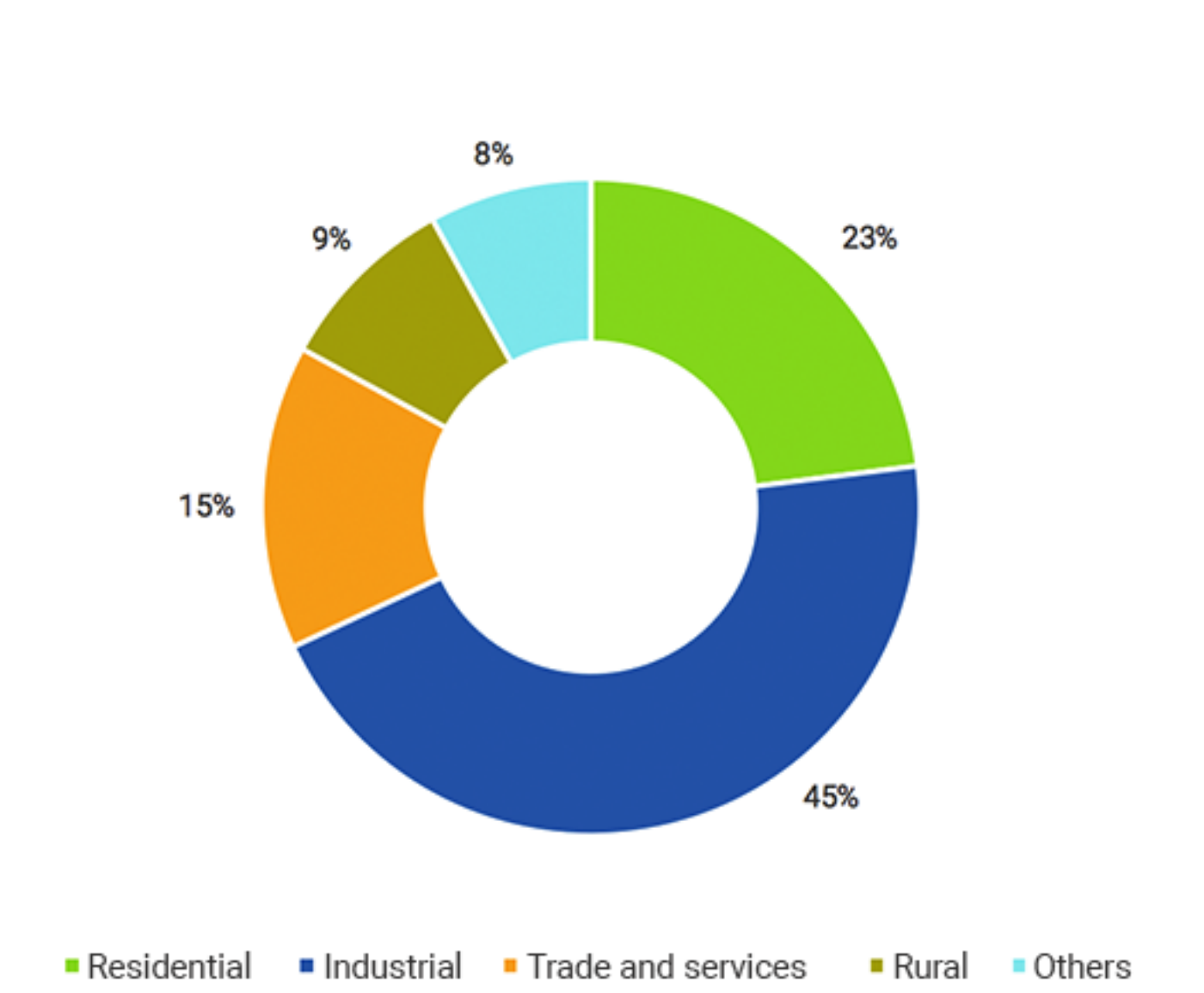
In December 2017 the Cemig Group invoiced 8,347,483 customers – a growth of 1.1% in the client base from December 2016. Of these, 8,347,100 were final consumers (including Cemig’s own consumption), and 383 were other agents in the Brazilian power industry.

Below are comments on the Cemig Group’s market segments:

### Sales to final consumers 2017



### Sales to final consumers 2016





The residential consumer category accounted for 18.1% of Cemig’s electricity sales in 2017, totaling 10,008,423 MWh, or 1.1% more than in 2016.

Average monthly consumption per consumer in the year was 123.8 kWh/month, or 0.6% less than in 2016 (124.6 kWh/month).

The increase in residential consumption is attributable to:

- 1. addition of 71,404 new consumer units;
- 2. lower temperatures than in the previous year, in most of the months of 2017, resulting in less use by consumers of air conditioners and ventilators in homes;
- 3. fewer calendar billing days in 2017 (364.2 days), than in 2016 (366.8 days);
- 4. still high unemployment rates.

**Industrial**

The supply billed to captive and free industrial clients in Minas Gerais and other states was 32.1% of the total volume of electricity traded by the group in 2017, at 17,760,807 MWh, or 8.9% less than in 2016.

This is the result of an 18.5% reduction in the captive market, and a 7.0% reduction in the Free Market. Both the segments are affected by the trends in productive activities, adjusting to the uncertainties in the Brazilian – and also international – political and economic scenarios.

Also, in the captive segment there is the effect of consumers migrating to the Free Market.

**Commercial and Services**

Power supply billed to captive and free clients in these categories in Minas Gerais and other states totaled 13.6% of the total volume of electricity traded by the group in 2017, at 7,507,310 MWh – up 14.2% from 2016. This reflects volume billed to captive consumers of Cemig D 8.1% lower in the year, and volume billed by Cemig GT and its wholly-owned subsidiaries to free clients in Minas Gerais and other states 161.7% higher than in 2016.

The lower consumption in the captive market reflects migration of consumers to the Free Market.

Increased consumption in the Free Market also reflects incorporation of 166 new facilities supplied with power from incentive-bearing sources.

**Rural**

Consumption by the rural consumer category, totaling 3,651,472 MWh, was 6.6% of the total volume sold by Cemig, and was 2.2% more than in 2016.

Behavior of this consumer category reflects an increase of 5,717 new consumers, and the low volume of rain in part of the otherwise rainy period.

**Other categories**

Supply to other categories – government, public lighting, public services, and Cemig’s own consumption – was 6.5% of the Group’s total sales by volume, totaling 3,533,976 MWh, in 2017, or 1.3% more than in 2016.

**Sales in the Free Market, and ‘bilateral contracts’**

In 2017 total sales of electricity were 10,350,371 MWh, or 3.0% more than in 2016.

Sales and trading transactions with other industry players in the Free Market often result from opportunities initiated in the spot market.

**Sales in the Regulated Market**

Sales in the Regulated Market in 2017 totaled 2,362,008 MWh, or 2.6% less than in 2016, due to a lower volume of contracts with distributors.

The table below shows the Cemig Group’s market in more detail, itemizing transactions in 2017 compared with 2016.



Energy sales per consumer market

	MWh <sup>(1)</sup>		
	12/31/17	12/31/16	Change %
Residential	10,008,423	9,915,807	0.93%
Industrial	17,760,807	19,494,391	-8.89%
Commercial, Services and Others	7,507,310	6,572,980	14.21%
Rural	3,651,472	3,574,724	2.15%
Public authorities	865,803	885,748	-2.25%
Public lighting	1,366,938	1,350,405	1.22%
Public services	1,301,135	1,252,043	3.92%
Subtotal	42,461,888	43,046,098	-1.36%
Own consumption	37,477	37,140	0.91%
	42,499,365	43,083,238	-1.36%
Wholesale supply to other concession holders <sup>(1)</sup>	12,777,405	12,508,453	2.15%
Total	55,276,770	55,591,691	-0.57%

(1) Data not reviewed by external auditors.

(2) Includes Regulated Market Electricity Sale Contracts

Cemig D	Number of clients		
	2017	2016	Change
Residential	6,765,201	6,691,673	1.10%
Industrial	73,833	74,535	-0.94%
Commercial, Services and Others	717,988	716,602	0.19%
Rural	705,541	694,026	1.66%
Public authorities	63,477	63,483	-0.01%
Public lighting	6,137	5,667	8.29%
Public services	12,976	12,548	3.41%
Total	8,345,153	8,258,534	1.05%

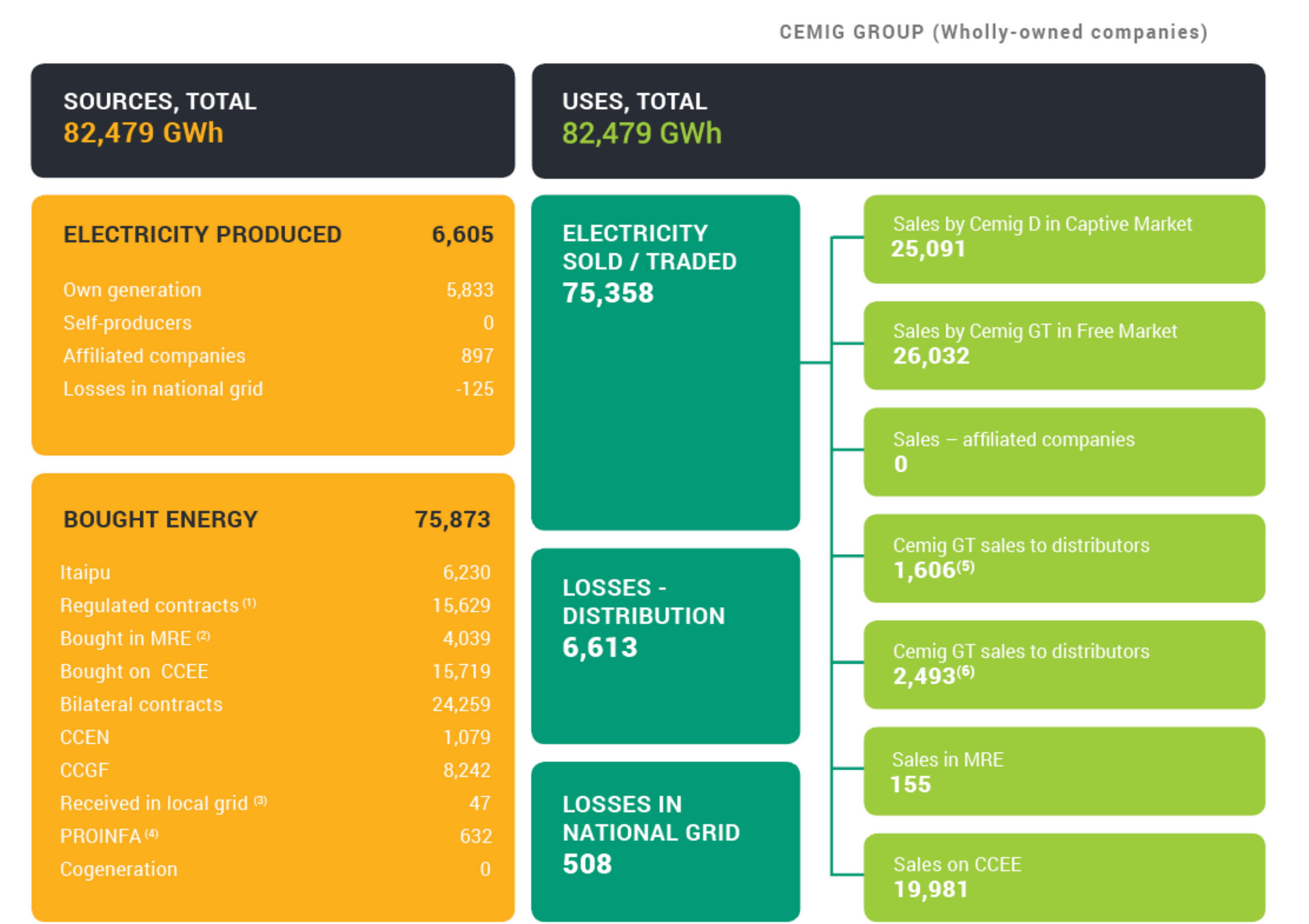
Power transported			
Industrial	531	443	19.86%
Commercial	456	264	72.73%
Rural	4	-	-
Power distribution company	3	3	-
	8,346,147	8,259,244	1.05%

# BALANCE OF SOURCES AND USES

EU12

EU2

This table shows the balance of sources of supply and uses of electricity for Cemig’s consolidated market – the total for purchase and sale transactions by companies of the group in 2017:



Includes electricity received and delivered by the wholly-owned companies of the Cemig Group: Cemig D, Cemig GT, Cemig PCH, Horizontes, Rosal, Sá Carvalho and SPCs. Excludes intercompany transactions.

1. Electricity Sale Contracts in the Regulated environment (Contratos de Comercialização de Energia no Ambiente Regulado - CCEARs); and supply acquired at Adjustment Auctions.

2. MRE = Energy Reallocation Mechanism.

3. Generation input directly into the Distribution Network.

4. Alternative power sources program (Proinfa).

5. Bilateral contracts of the companies Cemig GT, Sá Carvalho, Horizontes, Rosal, Cemig PCH and SPCs.

6. Sales by Cemig GT in the Regulated Market (Ambiente de Contratação Regulada – ACR)





Edimar Goncalves de Souza. Electrician of Cemig's São Gabriel operational base.

## ELECTRICITY QUALITY

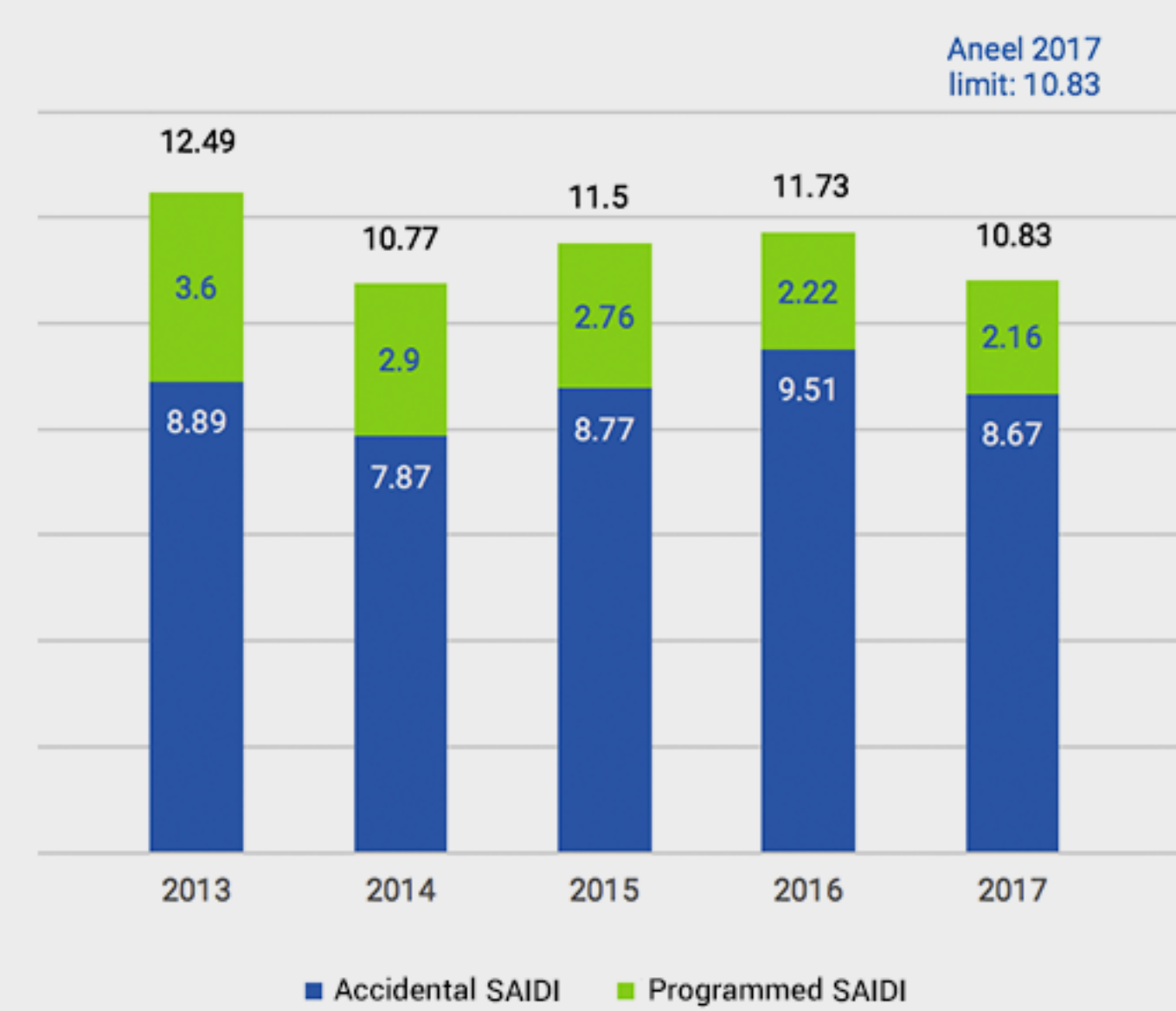
EU28EU29SDG1SDG7

To meet the standards required by the regulator and expected by clients, Cemig is continuously taking action to improve operational management, and organization logistics. Especially important in these efforts are its services for operational emergencies, and its permanent routine of preventive inspection and maintenance of substations, distribution lines and networks. It also invests in continuous training and qualifications for its staff, state-of-the-art technologies, and standardization of work processes.

The indicators of outage duration and frequency – SAIDI (Consumer Average Outage Duration) and SAIFI (Consumer Average Outage Frequency) are tools that help in assessing the effectiveness of these actions. Outages are divided into: those caused by accidents; and those that are pre-scheduled for maintenance and improvement of the electricity system.

These charts show recent levels of the SAIDI and SAIFI indicators:

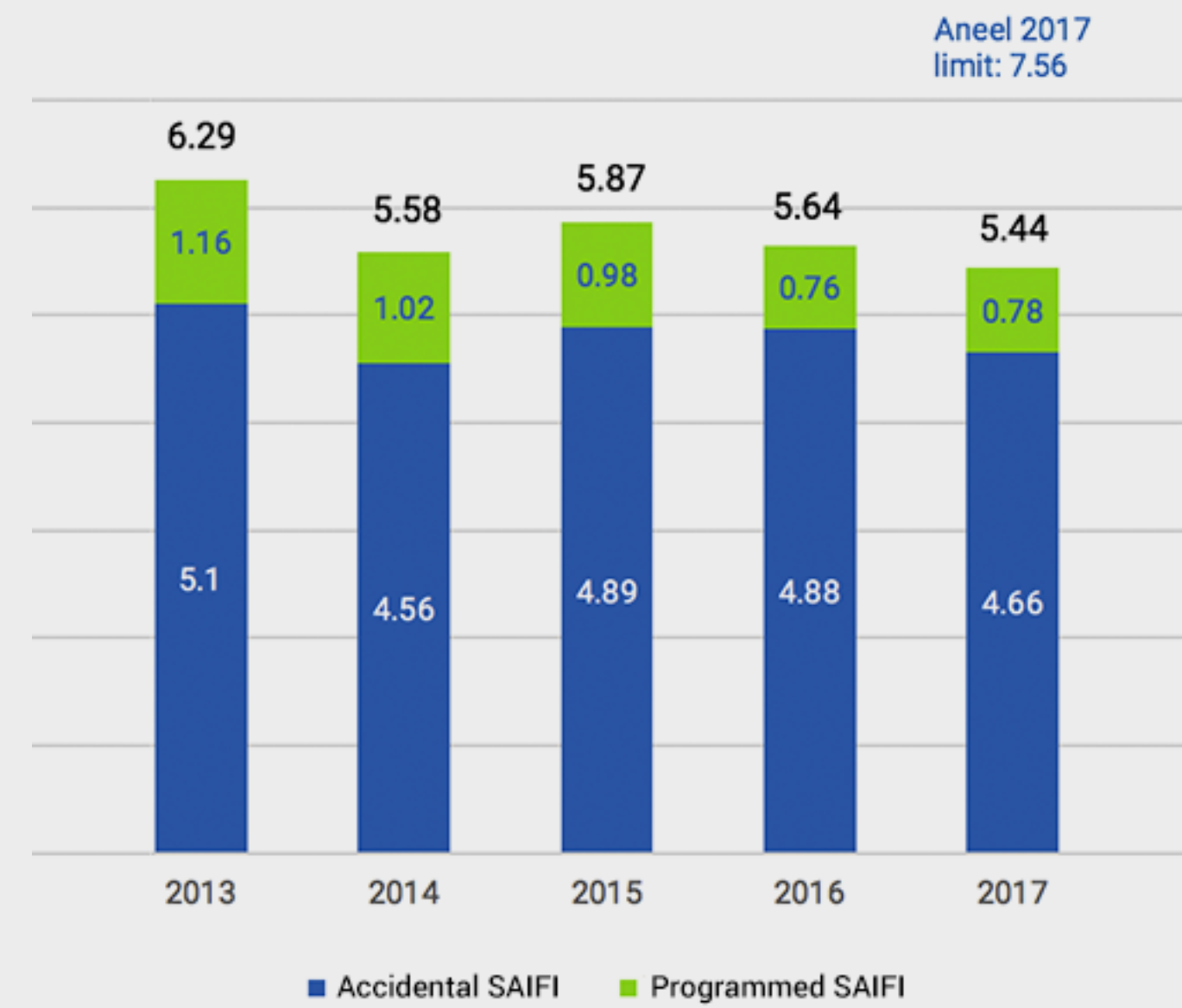
### SAIDI



In 2017 Cemig’s SAIDI was its second lowest in the last five years; and its SAIFI in 2017 was the lowest in that period.

In 2017 Cemig paid approximately R\$ 35.5 million in compensation to consumers for violation of the individual electricity supply continuity indicators (DIC, FIC, DMIC and DICRI). Lower SAIDI and SAIFI played a part in this compensation being lower than in 2016.

### SAIFI



Year	Compensation (R\$ million)
2013	24.3
2014	20.1
2015	37.3
2016	43.1
2017	35.5



Management of power losses is extremely important for distributors – the issues involved relate to sustainability, the environment, revenue, supply quality and public safety. For Cemig reducing losses is a strategic goal, mainly due to the revenue lost and, indirectly, environmental effects including greenhouse gas emissions.

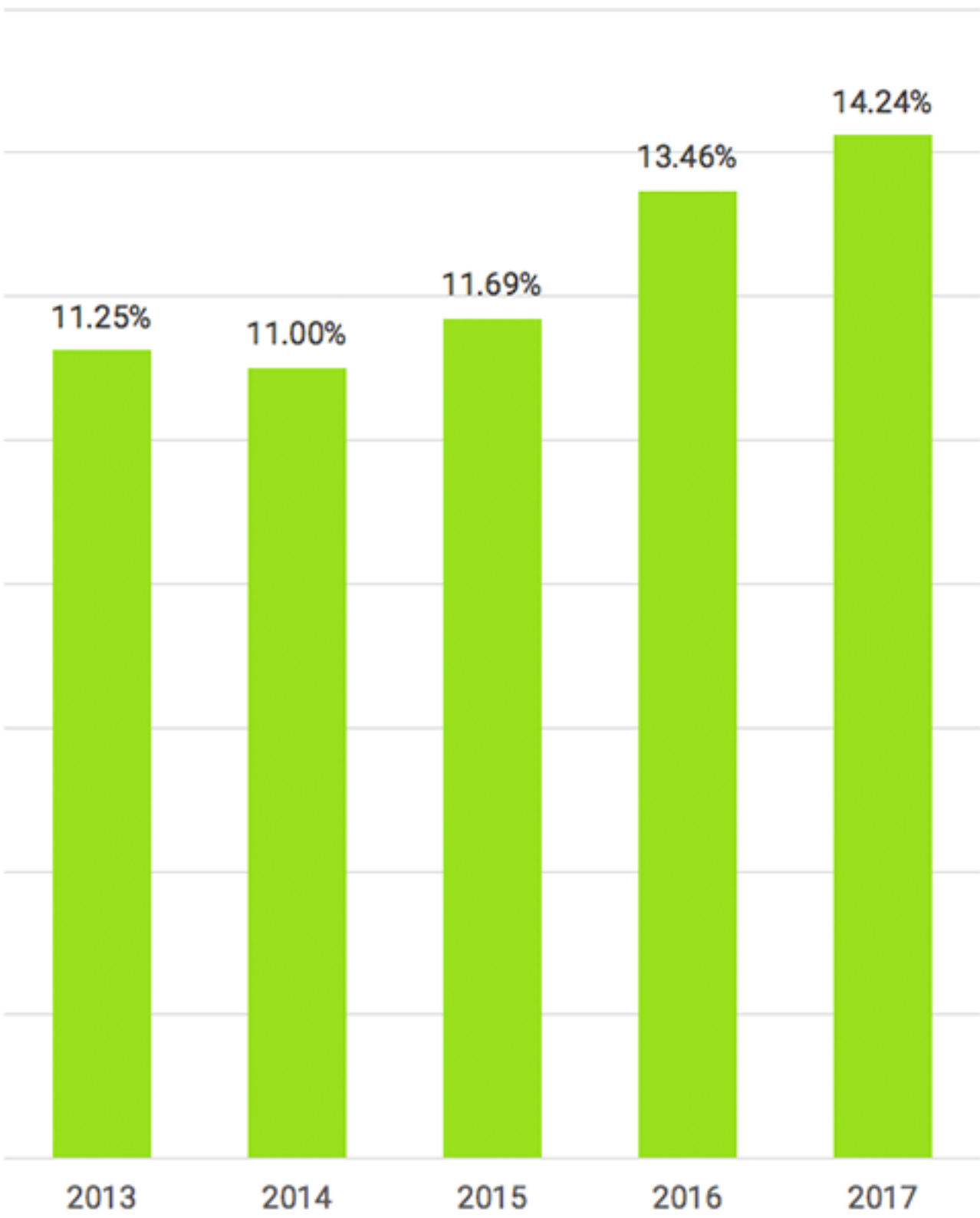
Cemig separates total losses in distribution (measured by its IPTD index) into: (a) technical losses (PPTD index); and (b) non-technical – also known as commercial – losses (PPNT index). They are calculated as the difference between the power invoiced and the power calculated as lost in the grid, as arbitrated by the CCEE.

Technical losses are inherent to transport of energy over transmission and distribution lines and equipment. They can arise, for example, from dispatch conditions at generating stations, works in progress on strengthening the network, behavior of the consumer market, or adoption of specific reduction measures. Non-technical losses either involve deficiencies or irregularities in metering or billing the consumer, or clandestine connections to the distributor’s network. Control of non-technical losses is fundamental for minimizing the related financial losses – which are in part passed through, in the process of tariff review, to the tariffs of consumers who pay the correct amount, on time.

Total losses in distribution

The principal risk associated with management of losses is the risk of not meeting the regulatory targets established by Aneel for the current tariff cycle (2013–17). With the challenging limits imposed by Aneel in the last tariff review – resulting from adoption of simplified statistical models for calculation of technical and non-technical losses – this is now a high risk. Further, recent changes made by the federal government in the industry, culminating in successive tariff adjustments, and the recent Brazilian recession (falling GDP growth, with rising inflation and interest rates) imposed budgetary restraints on the investments and controls that are necessary – signaling the possibility of the ratio of non-technical losses increasing.

In 2013 (at Cemig D’s 3rd cycle of Periodic Tariff reviews) Aneel made significant changes to calculation of losses, resulting in the application of challenging targets: it significantly altered the methodology of calculation of technical losses, especially in the simplified calculation models for the medium and low voltage segments.



The IPTD index (of total losses in Distribution) in 2017 was 14.24% of the total of power injected into the distribution system – this was 0.78 percentage points higher than in 2016, and higher than the regulatory target of 10.92% set for the end of 2017. The variable Total distribution losses is made up of (1) Technical losses, and (2) Commercial (Non-technical) losses.

In 2017 the index for technical losses was 8.98%, as a percentage of total energy injected into the system (a reduction of 0.11 percentage points compared to 2016), while the regulatory target was 7.84%. The reduction in the ratio of losses arises from a range of works on the high, medium and low voltage elements of the electricity system: investment of R\$ 4.5 billion in the electricity system is planned for the period 2018–23, to reduce technical losses by approximately 20% (equivalent to supply of 867 GWh). In an effort to bring the technical losses as measured by the regulatory framework closer to the real characteristics of Cemig D’s electricity system in the coming tariff cycle (2018–23), a work group was created in 2014 to make studies and implement the new methodology of calculation of technical losses that will apply for the fourth round of tariff cycle (module 7 of the Electricity Distribution Procedure (Prodist)).

The index for non-technical losses (PPNT) in 2017 was 5.26%, compared to a target of 3.08%. The increase is a reflection of Brazil’s adverse macroeconomic situation in recent years – with higher unemployment and inflation; the changes in the industry under Provisional Measure 579 (converted into Law 12783 of 2013); and successive tariff increases (totaling approximately 46% for residential users over the years 2014 and 2015). These factors boosted electricity frauds in Cemig’s concession area, especially over the period 2014–16.



In efforts to reduce non-technical losses, approximately 99,000 inspections of consumer units were made in 2017. This effort resulted in a recovery of 47.7 GWh, and an addition to overall volume of 96 GWh, corresponding to aggregate revenues for the Company of R\$ 39.1 and R\$ 46.1 million, respectively. In other words, the process of regularization of consumer units resulted in additional revenue of R\$ 85.2 million for the Company.

In a further effort to combat the increase in non-technical losses, and to educate the population on the various types of damage caused by the irregular procedures, Cemig carried out various multiple inspections at strategic points in Belo Horizonte and interior regions of the state, with simultaneous media advertising and news reports in the printed media, radio and TV. There were further operations for physical removal of clandestine connections to the electricity network.

Other improvements were also put in place: in the software that selects targets for inspection (SGC/SAP/SAS/MECE); in the quality of the process of collection for irregular consumption; and in ‘bulletproofing’ of the revenue from medium- and large-scale consumers. Since 2012 Cemig has had a structure dedicated to remote metering, enabling its Integrated Metering Center to remotely monitor approximately 13,000 large clients, which provide some 45% of its total billing.

Another important action to mitigate commercial losses is the program to modernize all consumption meters throughout the state. Under this program, approximately 30,000 obsolete and/or fully depreciated meters were replaced in 2017 by new meters with electronic technology, providing more exact metering and lower vulnerability to theft of supply. Metering was also installed in 1,032 feeder lines throughout Cemig D’s concessionary.

## TARIFFS, THEIR COMPONENTS AND ADJUSTMENTS

Tariffs are an extremely important subject for Cemig, as their levels directly influence the Company’s financial sustainability.

The methodology adopted by the regulator (Aneel) for setting tariffs and regulatory revenues is based on the concept that the revenue should be sufficient for the concession holder to achieve financial equilibrium. In the distribution and transmission businesses this revenue, which is defined and ratified by Aneel, takes the form of: (a) a tariff – for distribution; and (b) the Permitted Annual Revenue (Receita Anual Permitida or RAP), for generation. Especially for generation, with the changes introduced by Law 12783 of 2013, the subject has become one of extreme importance.

The risks associated with the subject are inherent to the logic of regulation by incentive, which simulates competitiveness in the market, creating a demand for the company to continuously seek efficiency and best practices. Another factor generating risk in regulated businesses is the possibility of new regulatory rules being introduced due to changes in policies for the sector, changing the established scenario. To identify and manage such regulatory risks, Cemig monitors and analyzes the changes in the regulatory framework governing electricity services – and proposes changes to maximize and safeguard its results, in alignment with the interests of clients and consumers.

<sup>10</sup> Law 12783 made new rules governing electricity generation, transmission and distribution, reduction of the sector’s internal charges, and tariffs.

<sup>11</sup> The Glosa index is the ratio between (a) investments made in the electricity system but not recognized by Aneel for reimbursement through tariffs, and (b) the total invested in the electricity system.

Cemig participates actively in dialogue on management of tariffs, through participation in public hearings held by Aneel on the subjects related to economic and financial regulations, and with the Mining and Energy Ministry, pointing out any unforeseen negative impacts of proposals, and contributing improvements. This also involves interacting with Aneel in the tariff-setting processes, contributing to correct repositioning of tariffs. Tariff management is also internal, in that people inside the company receive training in understanding the regulatory rules, and support in management of the various cases and procedures the company is involved in.

The management unit that oversees economic regulation of the Company takes an active part in formulating and calculating indicators for this oversight of the effects of regulation, including, for example:

- 1. IRCO D: the percentage of Cemig D’s costs and expenses that is covered by tariffs;
- 2. IRCO D: this is the same ratio, for transmission (Cemig GT);
- 3. Glosa D: an index<sup>11</sup> of investments in distribution that are not taken into account in tariffs;
- 4. Glosa GT: the same index of investments not recognized by regulations, for Cemig GT.

The Board of Directors evaluates these indicators periodically. Possible points of enhancement and divergence are assessed, within the process of continuous improvement, and preventive and/or corrective adaptations made to ensure that management mechanisms adhere to company goals. All Cemig’s regulatory processes are monitored and reviewed regularly by the Committee for Regulatory Affairs (CAR), made up of representatives of all management departments, which is responsible for evaluating and proposing contributions at public hearings held by Aneel and the Mining and Energy Ministry.

Cemig also has a computer system for control of regulatory obligations – named ‘Condor’ – to keep track of deadlines and compliance with the industry bodies’ requests and obligations. The Regulatory Obligations Fulfillment Index (‘ICOR’) is employed regularly to check on the completeness of this oversight.

<sup>11</sup> The Glosa index is the ratio between (a) investments made in the electricity system but not recognized by Aneel for reimbursement through tariffs, and (b) the total invested in the electricity system.





Heloisa Helena Haddad and Robson Laranjo in the Investor Market room, Aureliano Chaves building.

# FINANCIAL RESULTS

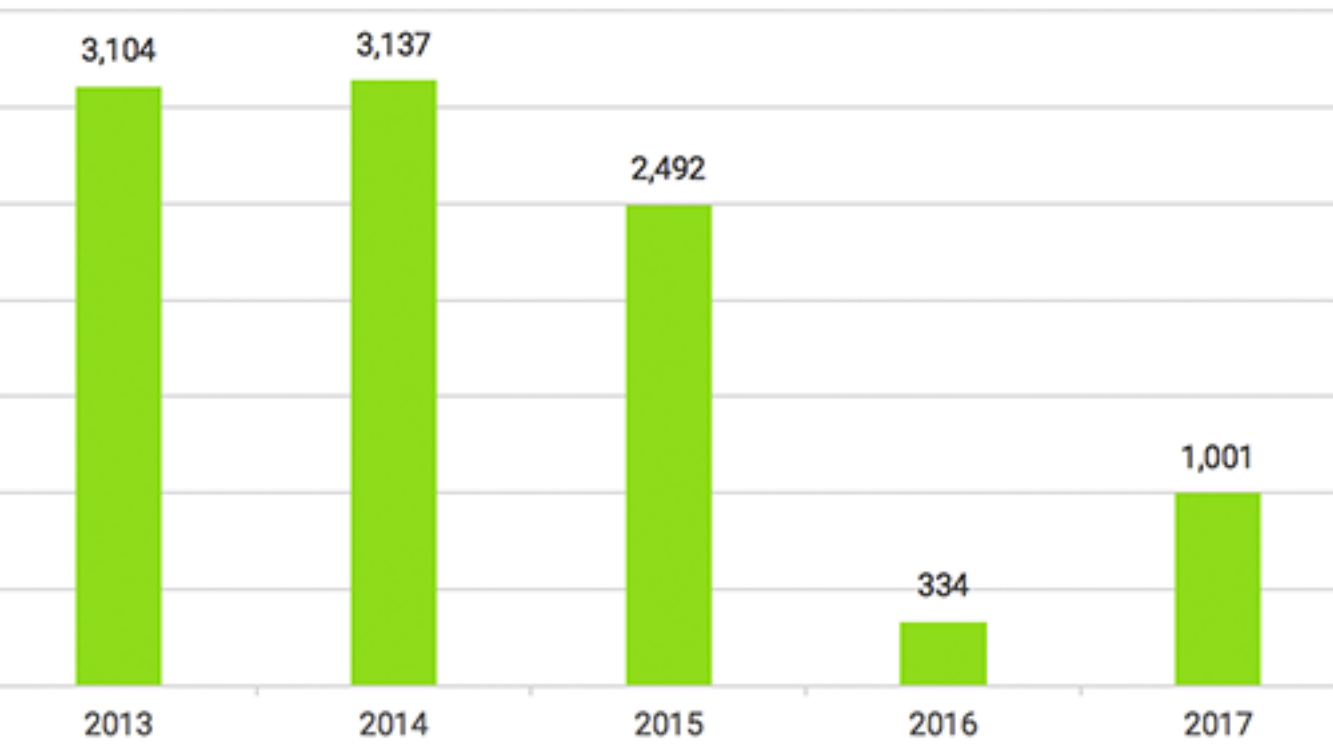
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G4-9 G4-17 EC1 SDG8

## NET PROFIT

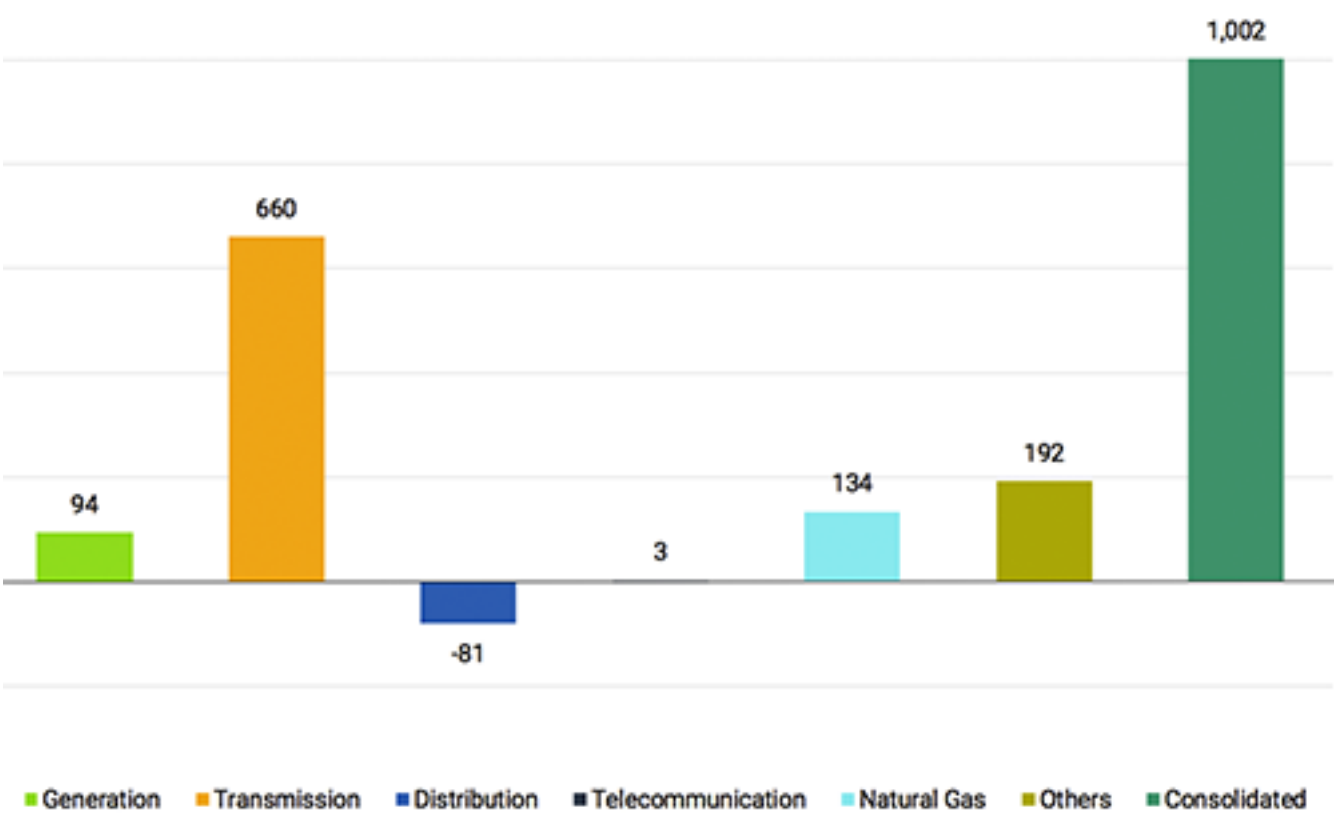
Cemig reports net profit of R\$ 1,001 million for 2017, compared to net profit of R\$ 334 million in 2016 – a year-on-year increase of 199.70% from 2016. . The following pages describe the main variations between the two periods in revenues, costs, expenses and financial items.

### Net Profit (R\$ million)



Cemig’s net profit by business segment is described below:

### Profit (loss) by business (R\$ million)





# OPERATING REVENUES

Operational revenue breaks down as follows:

Operating Revenues			
R\$ thousand	2016	2017	Change %
Revenue from supply of electricity	23,429,713	23,701,361	1.16%
Revenue from Use of Electricity Distribution Systems – "TUSD"	1,705,420	1,610,593	-5.56%
CVA and other financial components	(1,455,057)	988,260	-
Transmission revenue			
Transmission concession revenue	311,889	371,066	18.97%
Transmission construction revenue	53,824	24,827	-53.87%
Transmission indemnity revenue	751,101	373,217	-50.31%
Generation indemnity revenue	-	271,607	-
Distribution construction revenue	1,139,316	1,093,921	-3.98%
Adjustment of the expectation of the cash flow of the indemnifying financial asset of the distribution concession	7,582	8,586	13.24%
Revenue from financial update of bonus for grant	299,537	316,880	5.79%
Transactions in electricity on the CCEE	160,763	860,108	435.02%
Supply of natural gas	1,444,166	1,758,692	21.78%
Other operating revenues	1,421,074	1,483,377	4.38%
Taxes and charges applied to Revenue	(10,496,672)	(11,150,805)	6.23%
Net Operational Revenue	18,772,656	21,711,690	15.66%

# REVENUE FROM SUPPLY OF ELECTRICITY

Total revenue from supply of electricity in 2017 was R\$ 23,701 million, 1.16% higher than in 2016 (R\$ 23,430 million).

## Final consumers

Total revenue from electricity sold to final consumers, excluding Cemig’s own consumption, in 2017 was R\$ 20,438 million, or 0.10% less than the figure for 2016 of R\$ 20,458 million. The main factors in this revenue were:

- Higher revenues from the ‘Flag Tariff’ components of customer bills: R\$ 454 million in 2017, compared to R\$ 360 million in 2016. This reflects the low level of reservoirs, activating the ‘Yellow Flag’ and ‘Red Flag’ additional tariff rates, leading to higher revenue in 2017.
- The volume of electricity sold in 2017 was 1.36% lower than in 2016.
- The Annual Tariff Adjustment for Cemig D effective May 28, 2016 (full effect in 2017), with average (upward) effect on consumer tariffs of 3.78%.
- The Annual Tariff Adjustment for Cemig D effective May 28, 2017, with an average negative effect on consumer tariffs of 10.66%.

# OPERATIONAL COSTS AND EXPENSES

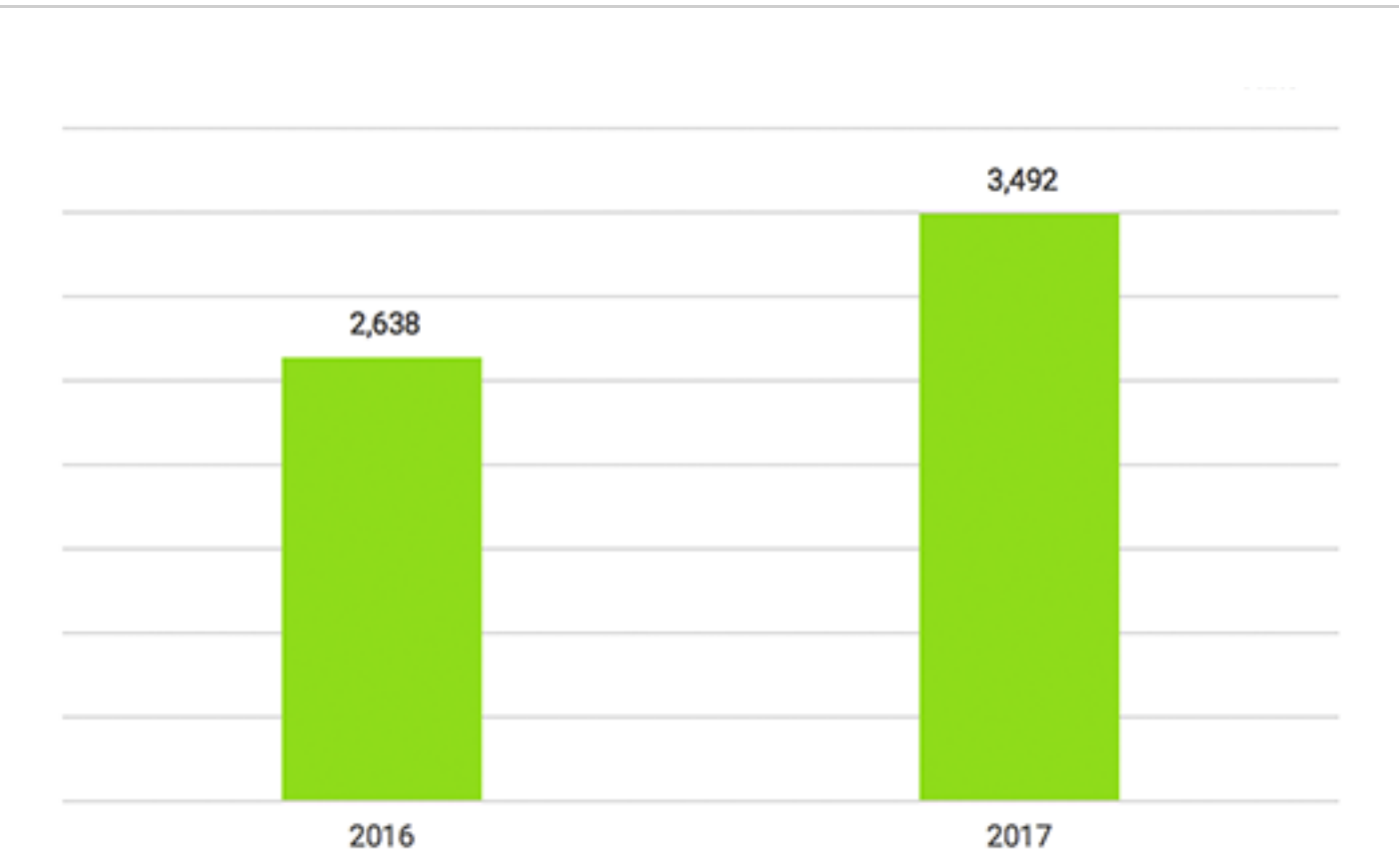
Operational costs and expenses totaled R\$ 18,817 million in 2017, or 18.32% more than in 2016 (R\$ 15,903 million). See more on the breakdown of Operational costs and expenses in Explanatory Note 27 of the Standardized Financial Statements (Demonstrações Financeiras Padronizadas - DFP).

# EBITDA

Cemig’s Ebitda was 37.98% higher in 2017 than 2016:

Ebitda – R\$ million	2016	2017	Change %
Net profit for the period	334	1,001	199.7%
+ Income tax and Social Contribution tax	33	644	1851.5%
+ Financial revenue (expenses)	1,437	997	-30.6%
+ Depreciation and amortization	834	850	1.9%
EBITDA	2,638	3,492	32.4%

Ebitda (R\$ million)



# INCOME AND SOCIAL CONTRIBUTION TAXES

In 2017, the Company’s expense on income tax and the Social Contribution tax totaled R\$ 644 million, on pre-tax profit of R\$ 1,654 million, an effective rate of 37.80%. In 2016, the Company’s expense on income tax and the Social Contribution tax totaled R\$ 33 million, on pre-tax profit of R\$ 368 million, an effective rate of 8.97%. There is a reconciliation of these effective rates with the nominal tax rates in Note 10c of the Standardized Financial Statements (Demonstrações Financeiras Padronizadas - DFP).

# NET FINANCIAL REVENUE (EXPENSES)

Cemig posted net financial expenses in 2017 of R\$ 997 million, compared to net financial expenses of R\$ 1,437 million in 2016. The main factors are:

- Costs and charges on loans and financings 20.91% lower, at R\$ 1,467 million in 2017, compared to R\$ 1,860 million in 2016. This was due mainly to the increase of debt indexed to the CDI Rate, and the lower value of the CDI rate, indexer for the debt: the CDI rate was 9.93% in 2017, compared to 14.06% in 2016.
- The result of FX variations in the year was lower: A net expense of R\$ 53 million in 2017, compared to a new gain of R\$ 26 million in 2016. This basically arises from an expense of R\$ 57 million in Cemig GT in 2017 resulting from raising of funds indexed to the US dollar (Eurobonds);
- Expense on monetary updating of loans and financing 55.62% lower, at R\$ 109 million in 2017, compared to R\$ 245 million in 2016 – due to the much lower IPCA inflation index in the year (2.95% in 2017, vs. 6.29% in 2016).
- Higher revenue from monetary variation on the CVA balances and Other financial components of tariffs: R\$ 42 million in 2017, vs. R\$ 204 million in 2016 – the 2016 figure contained an effect from ratification of the CVA amount by Aneel, in May 2016.
- Lower revenue from short-term financial investments: R\$ 205 million in 2017, 35.34% less than in 2016 (R\$ 317 million). This basically reflects the lower CDI rate in the year (9.93% in 2017, vs. 14.06% in 2016).
- Higher monetary updating of tied funds: R\$ 191 million in 2017, compared to R\$ 46 million in 2016. In 2017 the Company recognized a revenue item of R\$ 82 million, for reversal of the provision for the lawsuit challenging the constitutionality of inclusion of ICMS tax (payable or already paid) within the amount of revenue on which the Pasep and Cofins taxes are charged.
- There was an expense of R\$ 46 million in 2017, for monetary adjustment on the pre-sale of power supply under contract to bring forward power supply sales during the year.



For the breakdown of Financial Revenues and Expenses please see Note 28 of the Standardized Financial Statements (Demonstrações Financeiras Padronizadas - DFP).



Heloisa Helena Haddad, Robson Laranjo and Isabela Lima Della Croce in the Investor Market room, Aureliano Chaves building.

## LIQUIDITY AND CAPITAL RESOURCES

Cemig’s business is capital-intensive. Historically, the Company has a need for capital to finance the construction of new generation facilities and expansion and modernization of the existing generation, transmission and distribution facilities.

The liquidity requirements of Cemig are also affected by its dividend policy. Company’s liquidity and capital needs are principally financed with cash generated by operations and, on a lesser scale, with funds from financing.

## CASH AND CASH EQUIVALENTS

Cash and cash equivalents at December 31, 2017 totaled R\$ 1,030 million, compared to R\$ 995 million on December 31, 2016. No cash nor cash equivalents were held in any other currency than the Real. The main components of this variation:

### Cash flow from operations

The totals of net cash generated by operational activities in 2017 and 2016 were, respectively, R\$ 580 million and R\$ 1,213 million. The lower net cash from operational activities in 2017 than 2016 mainly reflects the lower net profit, after adjustment for non-cash items, which was R\$ 2,861 million in 2017, vs. R\$ 5,477 million in 2016.

The lower cash flow from operational activities in 2017 than in 2016 was mainly due to higher cash outflow in 2017 to cover ‘portion A’ non-manageable costs, due to the higher expense of electricity due to the lower hydroelectric reservoir levels, resulting in the need to store water in the system, and activate thermoelectric plants, resulting in a higher price for power.

### Cash used in investment activities

The Company used net cash of R\$ 386 million in investment activities in 2017, compared to net cash of R\$ 614 million used in investment activities in 2016. In 2017 the total invested in securities was positive R\$ 4 million, compared to redemptions of R\$ 1,401 million in 2016. In 2017 financing activities consumed R\$ 254 million, compared to R\$ 1,455 million in 2016.

### Cash flow in financing activities

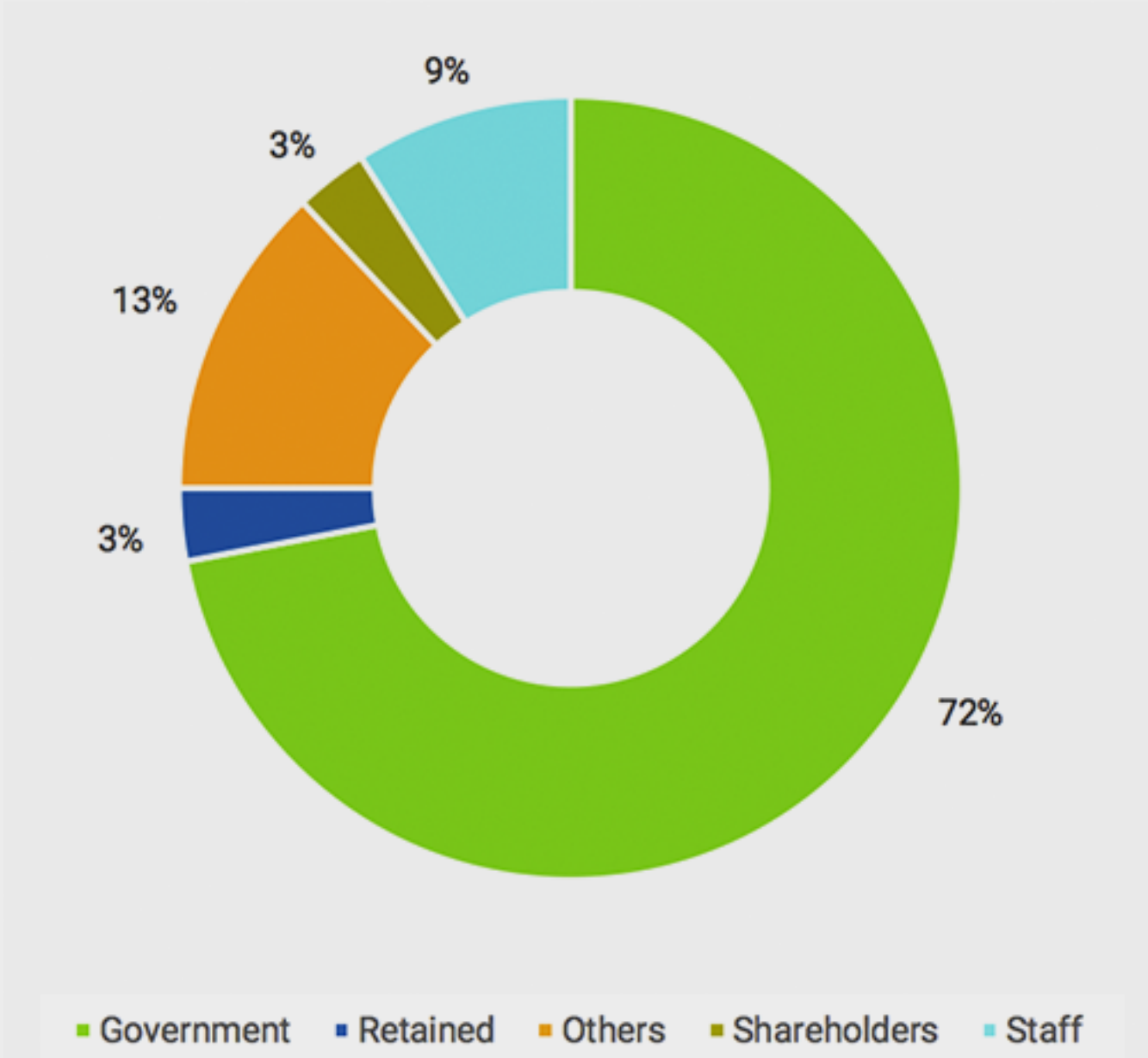
In 2017 financing activities consumed R\$ 159 million. This comprised: amortization of financings, R\$ 4,131 million; cost of rollover of debt, R\$11 million; and payment of R\$ 540 million in dividends and Interest on Equity; partially offset by incoming funds from financings of R\$ 3,308 million, and capital of R\$ 1,215 million subscribed by stockholders against the future capital increase.

In 2016 financing activities resulted in a net outflow of R\$ 529 million, comprising: R\$ 5,592 million paid in amortization of financings; R\$ 675 million paid in dividends and Interest on Equity; and inflow from financings of R\$ 5,737 million.



# DISTRIBUTION OF VALUE ADDED - DVA

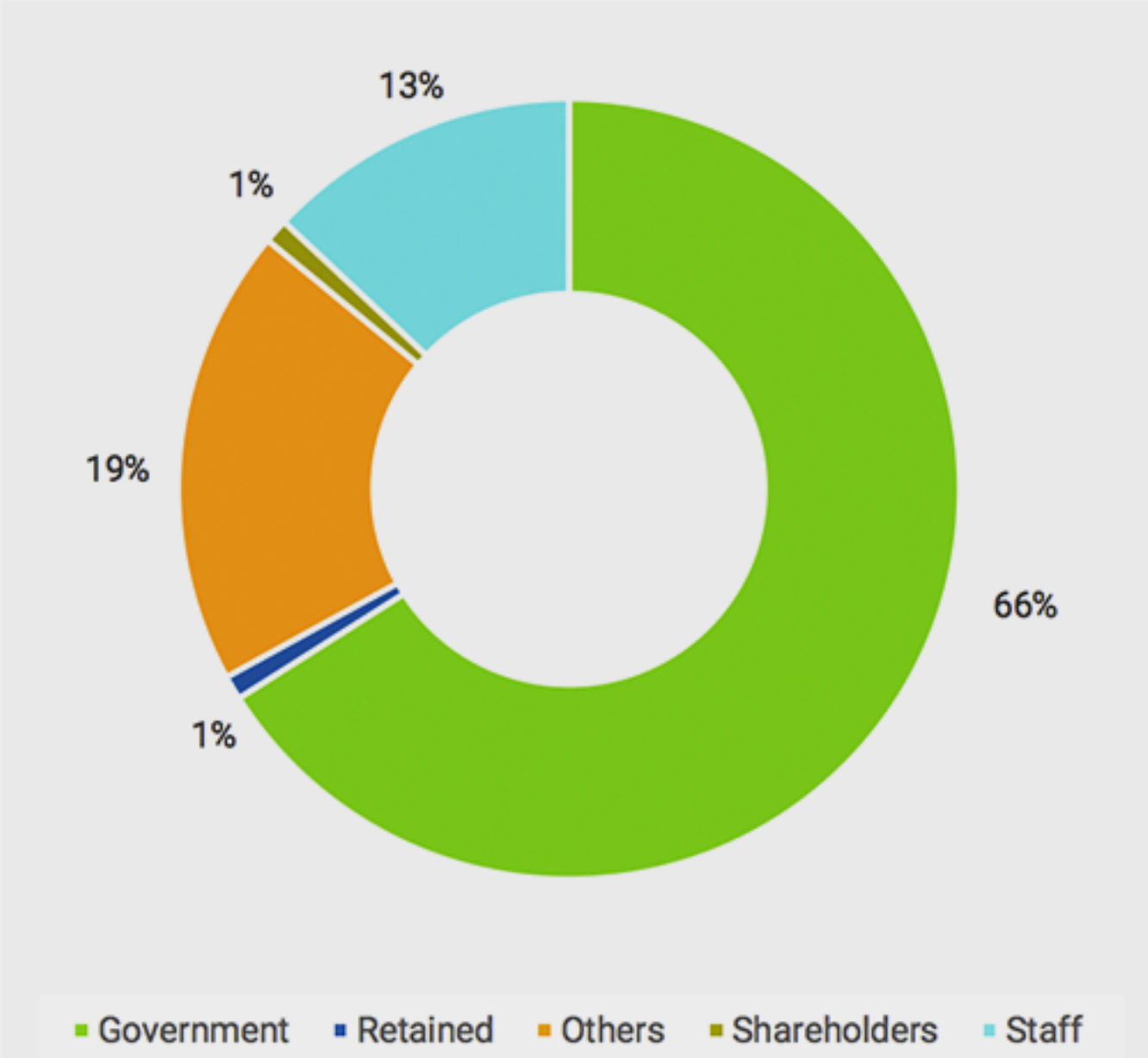
Distribution of added value - 2017



The Company presented an increase of 32.41% in EBITDA. The main items that affected the result are described in this report and in the Standardized Financial Statements (DFPs).

In line with the variation of EBITDA, EBITDA margin increased from 14.05% in 2016 to 16.09% in 2017.

Distribution of added value - 2016



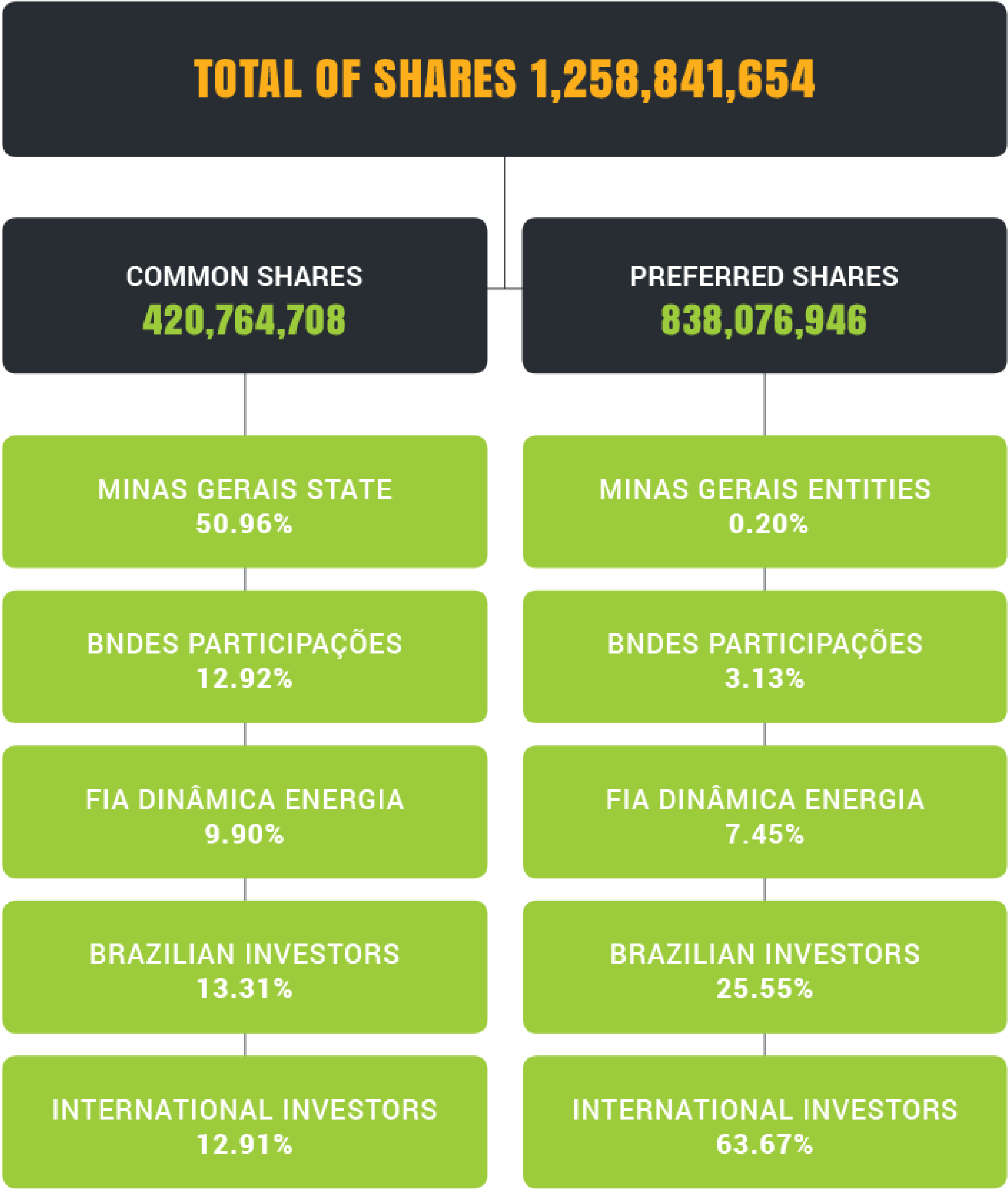
The Value Added Statement (Demonstração do Valor Adicionado, or DVA) is an indicator of the Company’s generation of wealth, and its importance for society in general: the added value created in 2017 was R\$ 15,050 million, which compares to R\$ 14,754 million in 2016.

## THE CAPITAL MARKETS AND DIVIDENDS

Cemig’s shares were first listed, on the stock exchange of Minas Gerais State, on October 14, 1960. Since 1972 they have been traded on the São Paulo stock exchange – under the tickers CMIG3 for the common (ON) shares, and CMIG4 for the preferred shares (PN), Cemig has been listed at Corporate Governance Level 1 on the São Paulo stock exchange since October 2001. Since 1993, ADRs for Cemig shares have traded on the New York stock exchange (tickers CIG and CIG/C) – at Level 2, since 2001; and Cemig shares have traded on the Madrid stock exchange (as XCMIG) since 2002.

### Stockholding structure

This chart shows the stockholding structure of Cemig on December 31, 2017, with share capital of R\$ 6,294 million:





Share prices

The closing prices of Cemig’s securities in São Paulo (B3), New York (NYSE) and Madrid (Latibex) in 2016 and 2017 were as follows:

Security	Symbols	Currency	Close of 2016	Close of 2017
Cemig PN	CMIG4	R\$	7.28	6.87
Cemig ON	CMIG3	R\$	7.70	6.41
ADR PN	CIG	US\$	2.22	2.06
ADR ON	CIG,C	US\$	2.53	1.85
Cemig PN (Latibex)	XCMIG	Euros	2.25	1.78

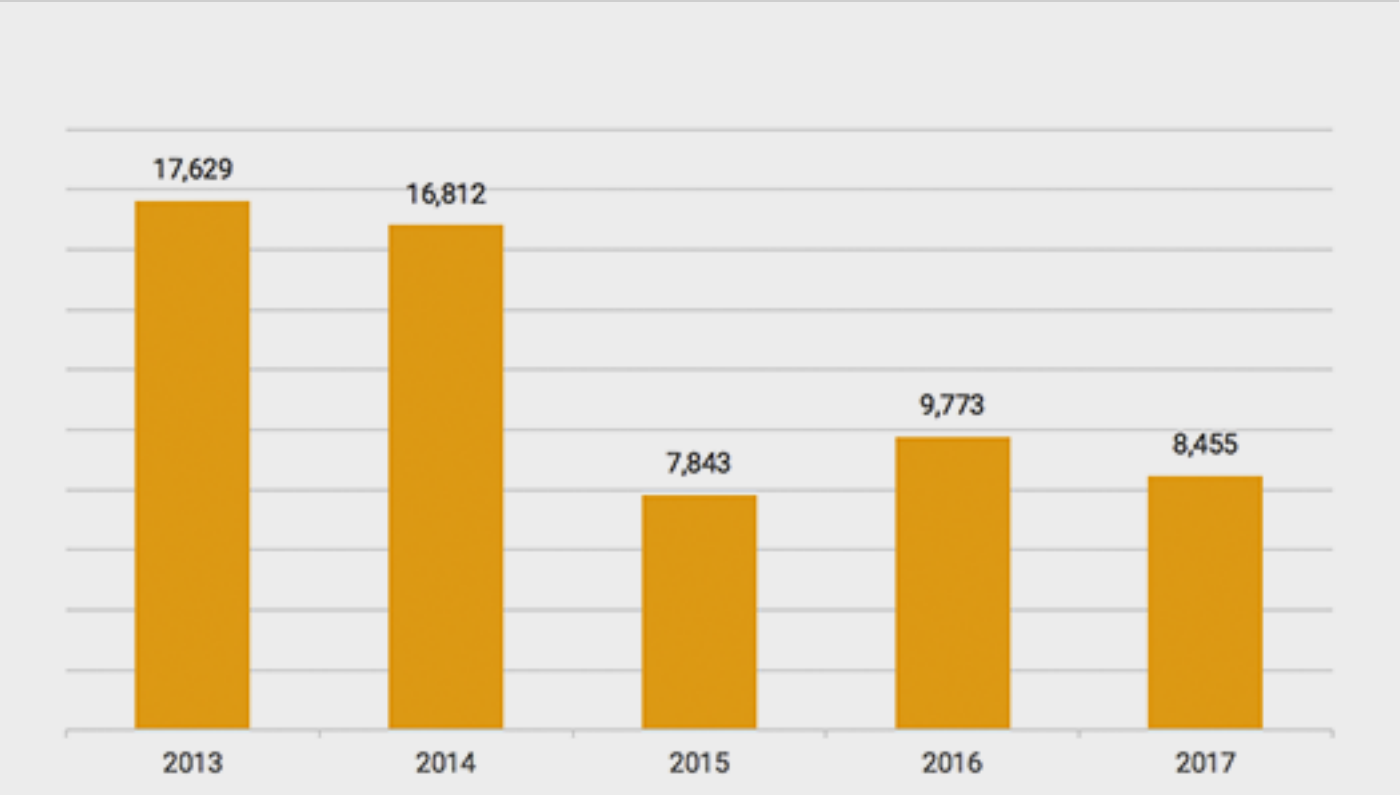
Total trading volume in the preferred shares, CMIG4, in 2017 was R\$ 17.02 billion, with daily average volume of approximately R\$ 69.17 million. Considering the trading volume of ON and PN shares, Cemig was the second company with the highest liquidity among companies in the Brazilian electricity sector in the period and one of the most traded in the capital market of the country.

With respect to the NYSE, Cemig's total preferred trading volume (CIG) reached US\$ 2.96 billion in 2017, which reflects the recognition of the investor market and keeps Cemig as a global option investment.

Ibovespa, reference index for the performance of B3, registered a 26.9% increase and closed the year at 76,402 points. Cemig's preferred shares were lower than the Brazilian stock market's main index, showing losses of 5.6% in 2017, as well as the performance of the electric energy sector index, which rose 10.0%. The company's common shares, in turn, depreciated by 16.7%. Cemig's Preferred ADRs (CIG), traded in New York, recorded losses of 7.1% for the year.

	CMIG4	CMIG3	CIG	CIG.C	IBOV	DJIA	IEE
2017	-5.60%	-16.30%	-7.10%	-26.80%	26.90%	25.10%	10.00%

Market capitalization (R\$ million)



Dividend policy

In its by-laws Cemig assumes the undertaking to distribute, every year, a minimum dividend of 50% of the net profit for the previous year. Additionally, extraordinary dividends can be distributed each two years, or more frequently, if cash availability permits.

Proposal of allocation of net profit

The Board of Directors decided to propose to the Annual General Meeting to be held on April 30, 2018 that the profit for 2017, of R\$ 1,001 million, and the balance of Retained earnings, of R\$ 28 million should be allocated as follows:

- R\$ 486 million: for payment of the minimum mandatory dividend to holders of preferred shares whose names are in the Company’s Nominal Share Registry on the date of the AGM.
- R\$ 14 million: for payment of the minimum mandatory dividend to holders of common shares whose names are in the Company’s Nominal Share Registry on the date of the AGM.
- R\$ 528 million to be held in Stockholders’ equity in the Retained earnings reserve, to provide funding for the Company’s consolidated investments planned for 2017, in accordance with a capital budget.
- R\$ 1 million to be held in Stockholders’ equity in the Tax incentives reserve, for tax incentives gained in 2017 as a result of investment in the region of Sudene.





Nathália Dornellas and Lucas Souto, managers of the Cemig's communication team.

# MANAGEMENT OF PEOPLE

DMA

SDG-8

To achieve its vision for the future, Cemig needs people who are capable, productive and able to support the challenges and aspirations described in the corporate strategy. The Company employs its Human Resources Policy as a guide for employment relations, and as a people management model that adds value to the businesses. In the current strategic planning period, four priority challenges are identified as pillars for Cemig's people management: increase in productivity; orientation to results; development of people and leadership; and workplace health and safety.

The strategic plan constructed to meet these challenges is based on the central concept of recognizing peoples' value, and helping them develop – making a decisive contribution to the plan's objectives. Below are some of the highlights of Cemig's people management in 2017:

## The Strategic HR Program:

This program to achieve the corporate strategic planning goals includes 9 initiatives to support HR management, transforming the people management practice and meeting the demands involved in achieving the four challenges. Actions taken include review of the Careers and Compensation Plan; creation of a process of management of the whole workforce; a program for development of leadership; and structuring of the Health and Safety Program.

Expected benefits include: meeting the challenges; meeting the new levels of productivity demanded by the new concession contract – people's participation being an essential element in achieving this; creating, updating and implementing efficient people management programs; a workforce of the right quantity and quality; an integrated work accident and risk prevention plan; and establishment of guidelines for interpersonal relations in the Company.

Most of the actions have been in progress since 2016. By benchmarking from other companies in the industry, Cemig has identified needs to adapt the workforce to market references. Adopting actions to increase productivity of processes, it has been possible to reduce the Company's headcount by almost 2,000 in 2016 and 2017, reducing expenses without loss of quality in the services provided to the public. The 2017 Voluntary Retirement Program was accepted by 1,189 employees, enabling them to program their dates of leaving the Company. As it turned out, more employees accepted this plan than expected, but the resulting effect will be made good by hiring new employees who took part in three public competitions at the end of 2017.

## Performance evaluation:

This was held once again in 2017 – an opportunity for employees to develop their own work and careers, and, jointly with the Company, to improve results and productivity.

## Leadership Development Program

This was begun in 2016, to promote continuous development of leadership for the Company – based on qualities of entrepreneurship, innovation, inspiration, participation, confidence, commitment, alignment and results.

The program aims to align the leadership with senior management's strategic guidelines, and the need for participative construction of standards of performance to achieve the result expected in the strategic plan.

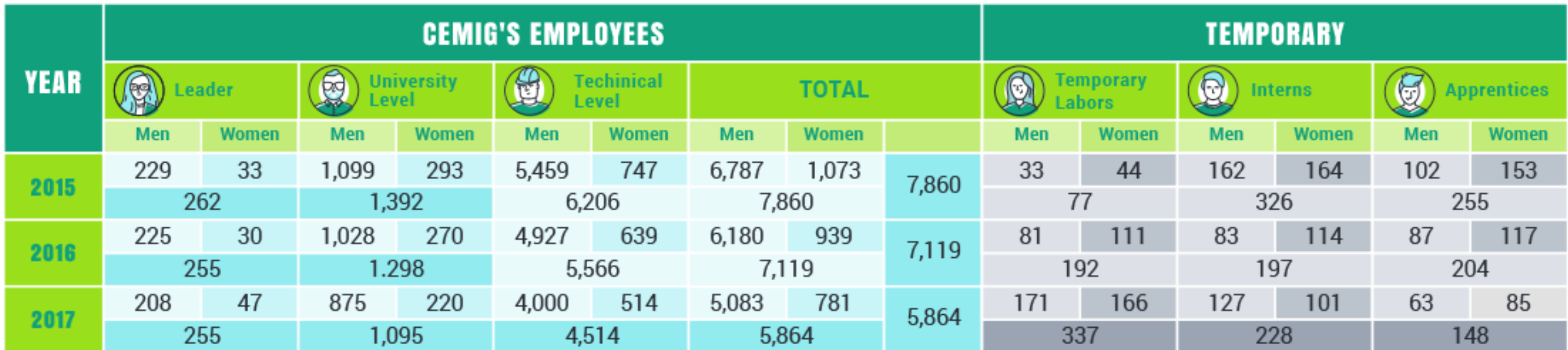
In 2017, 110 managers took part in the program in two CEO Forums, and 40 managers participated in two Leadership Workshops which aimed to identify and debate the principles of Cemig leadership.

## Cemig Women Committee

This committee, created in 2015, is being restructured and developed for optimum results in gender and race equality – based on the outlook that a higher degree of equity makes possible a better use of an employee's potential, opening the way for wider solutions for the Company's growth.



G4-10	LA1	LA12
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Management of people also includes management of the contracts and working relationships of people contracted for temporary work, registered under-age apprentices, and interns. Temporary Labor Contracts are made for specific and temporary conditions, where there is no possibility of filling the vacancy in any other way, with a defined expiration. Cemig’s Intern Program aims to provide opportunities for professional development of students in technical and university courses by associating theory and practice. The Cemig Apprentices Program provides adolescents from less privileged backgrounds with development of new competences, through a professional apprenticeship, under supervision of tutors who are Cemig employees. The other outsourced workers are not monitored directly, but the Company maintains oversight on the companies providing services or materials, with criteria required in terms of employment law, health and safety, and diversity among other factors.

Due to the nature of the company’s current business and operations, 99.5% of its workforce continue to be in the State of Minas Gerais. Only 26 employees work outside the State. Employees of African-Brazilian, mixed-race or indigenous origin are 35.29% of the Company’s total employees.

Out the chief officers and members of the Board of Directors, 40% are aged 31 to 50, 78% are over 50, and only 2% are under 30. They compromise a group of 24 men and 3 women. Details by race are not available since this self-description is not mandatory.

The diversity of generations can be seen in the stratification of the Company’s employees, with seniority and experience provided by the 17.33% of professionals who are over the age of 50.

Cemig’s total headcount was significantly reduced in 2017, due to the 2017 PDVP Voluntary Retirement Program, which continues the policy of retirement for those who already qualify for it. A total of 1,189 people left the Company in 2016, representing a total turnover for the Company of 10.1% – 9.9% for men, 11.9% for women. By the nature of the program, none of these were layoffs or in any way multiple dismissals. The 2017 PDVP program, which was entirely voluntary, requires a time of service of 25 years or more with the Company by October 17, 2017.

As a company with both government and private-sector stockholdings, Cemig is part of the Indirect Public Administration, and is thus subject to entry of new employees by public competition. 26 employees were hired in 2017, of which 22 were men, two aged under 30, 15 ranging from 31 to 50 years and, and five aged above 50, and four were women, all aged in the range of 31 to 50 years. Three public competitions were opened to fill 159 places: 3 for employment doctors; 47 for operational-level employees; and 109 for professional/university level employees. These people will be hired in 2018.

Complying with Minas Gerais State Law 11867/95, the Company obeys the allocation ratio of 10% for disabled people hired by public competition; but the low overall number of disabled people in Cemig’s workforce reflects the high number of jobs with electricity risk, which cannot be offered to disabled people.

Outsourced employees are managed by specific agreements made by each business area contracting them. These processes include the considerations of health and safety at every stage. There are more details in the item Suppliers of this report.

## COMPENSATION, BENEFITS AND PREPARATION FOR RETIREMENT

LA2	LA3	LA10	EC3	EU15	SDG8
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Cemig provides its employees with remuneration and benefits in harmony with the best practices in the market, in line with Sustainable Development Goal 8 – “Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all”.

Cemig’s remuneration strategy, aiming to continuously enhance the Company’s attractiveness in the employment market, reflects a market-compatible positioning with competitive benefits and programs for the employees’ welfare. This is the prime factor underlying the Company’s Careers and Compensation Plan.

Levels of compensation are decided taking into account evaluations of job responsibilities, made using specific methods. This plan is oriented to attract, develop, retain and accord value to the Company’s best professional talents, who are necessary for the conduct of its business, preserving the corporate culture and alignment with its objectives, competitiveness and longevity in its market, without losing sight of the particularities of its segment of operation, and the concept that it is people, through the result of their work, that are responsible for maintaining and developing the organization. The plan also establishes criteria for job changes and promotions, based on factors including the employee’s performance.

Updating of the Careers and Compensation Plan is seen as a key element for achieving the strategic objectives – favoring retention, attractiveness of the Company, competitiveness and orientation to results, and providing internal consistency and balanced budgets. Due to its structural nature – supporting and interacting with other people management processes, after finalization in November 2017 the plan goes to Senior Management for approval in early 2018. A policy for management of the plan will then be disseminated, as the instrument to orient the overall management of employees in the Company. The complete plan is expected to be put into effect in 2018. It includes an updated catalog of career positions and structures, linked to the corporate needs, providing medium and long term professional horizons, with salary tables reflecting the reality of the market and the Company. It also defines the basic workforce structure, quantitatively and qualitatively, in terms of the jobs and functions necessary for the Company’s operation, to provide support for all related activities with staff in the future: hiring, movement, development and dismissal, with a focus on improvement of productivity in all areas and achievement of results.



This table shows ratios comparing the lowest base salary paid by Cemig, and the lowest remuneration, with the current minimum wage:

Company	Cemig H	Cemig GT	Cemig D
(Lowest base salary) / (minimum wage) at Dec. 31, 2017	3.52	2.30	2.28
(Lowest compensation) / (minimum wage) at Dec. 31, 2017	3.66	2.72	2.28

Obs: The minimum wage as of dec 31st, 2017 was R\$ 1,394.07

Cemig will continue to offer benefits that favor the quality of life and social well-being of employees and their families, contributing to a continuous improvement of the organizational climate.

As variable remuneration, Cemig distributes Profit Shares (known as PLR – Participação nos Lucros e Resultados). The levels of this benefit are agreed between Cemig and its employees via unions. In 2017 the negotiating proposal was presented to all three unions, and agreement reached with them all, covering 100% of the employees in 2018. The profit-sharing amount paid is based on whether each area meets specific targets, and also on common corporate targets aligned with the company’s strategic objectives. As well as its remuneration programs, Cemig offers a series of benefits administered by the company and by the pension fund, Forluz, and the health insurance plan, Cemig Saúde:

- Benefits administered directly by Cemig:** mid-month advance on salary; advance against end-of-year ‘13th-salary’ mandatory bonus, in any month of the year, at the employee’s request; advance against salary on return from vacation, repaid by installments; reimbursement of expenses for disabled employees and/or dependents; education assistance; funeral assistance; paternity leave if mother is incapacitated; salary complement for employees on leave from work for INSS-qualifying health issues; five days’ leave on civil marriage (rather than the legal requirement of three days); five days’ leave to accompany ill relations; meal and food vouchers maintained for six months if off work – and in the case of work accidents, for 30 months; and day-care center support after termination of INSS leave until the child is age 7, for female employees; employees who are widowers with guardianship of children; a married male employee whose wife is an invalid; or a single divorced or legally separated parent who has guardianship of children.
- Benefits administered by Cemig’s Pension Fund (Forluz):** The Private Pension Plan.
- Benefits administered by Cemig Saúde:** Cover for expenses on medical consultations, examinations and tests, outpatient attendance, hospitalization, surgery, obstetric care and dental treatment for employees and dependents. Cemig also maintains health programs administered by Cemig Saúde such as the New Breaths (Novos Ares) policy for giving up smoking, and the Weight in Balance (Peso em Equilíbrio) program against obesity.

In 2017, maternity leave was granted to 32 women, of whom 3 were still on leave on January 1, 2018; all the others returned to work following the conclusion of their leave. None of them left the Company. Figures 12 months after return from leave show a 100% retention rate.

Among men, in 2017, 96 obtained the right to paternity leave. Of these only three left the Company. The percentage still with the company 12 months after their paternity leave was 96.87%.

- Retirement preparation program:** The Retirement Preparation Seminar (‘PPA’) oriented 259 participants in 2017 – including employees and their partners – in seven separate group courses offered during the year. Cemig has run this program since 1985, aiming to help participants construct a life plan and discuss ways of using time available in retirement. The seminar deals with several subjects including health, pension plans, psychology, entrepreneurship, social security, life insurance and financial education.

This program is aligned with Law 8842 of January 4, 1994, in which Article 10, Sub-item IV, subclause ‘c’ gives public bodies and entities the functions of "creating and stimulating maintenance of programs to prepare for retirement in the public and private sector, at least two years before retirement occurs".

Period	Employees who will be qualified for retirement (%)		
	Leadership Positions	University Level	Technical-operational
From 2017 to 2021	0.85%	1.40%	7.38%
From 2022 to 2026	1.47%	3.65%	18.79%

# DIVERSITY, EQUALITY OF OPPORTUNITY, AND HUMAN RIGHTS

HR3	HR12	LA13	SDG5	SDG10
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One of Cemig’s principal values is Ethics. This is, indeed, so strong a value in the company that in its Statement of Ethical Principles and Code of Professional Conduct, under “Principle No 1 -- Commitment to ethics and transparency”, the document requires all readers to adopt criteria of ethics and integrity, good faith and transparency, in all their conduct.

In Chapter 3 of that Statement – “Criteria for conduct” – Cemig undertakes to value diversity and equality of opportunity, and combat any form of discrimination.

Cemig is also a signatory of the United Nations Global Compact, which encourages practices to eliminate any kind of employment discrimination. It has issued a Corporate Social Responsibility booklet disseminating practices specified in the Compact and in Social Accountability standard 8000 – SA 8000, which encourages creation of good and dignified working conditions.

Situations thought to involve discrimination can be reported through the Company’s anonymous complaint hotline. Through this anonymous line, in 2017 Cemig received one accusation relating to human rights and two involving gender equality – these are being investigated. There were a further 23 reports via the hotline related to equality of opportunity. Of these, 17 have been processed and 6 are under investigation - as reported in the item Ethics and Transparency.

Cemig was traditionally a male working environment, but has sought to hire and encourage women to join its staff in both technical and management positions. It offers equal opportunity and differentiated benefits, such as pre-natal, post-partum and newborn care in the first three months of life, and daycare assistance.

In April 2016 Cemig adhered voluntarily to the Gender and Race Pro-Equity Program – an initiative of the Cemig Women Committee – jointly with the Office of the Chief Human Resources and Relations Officer, preparing a sustainable action plan for gender and race equality to be put in place over 2016–18.

These actions are for implementation across 8 dimensions in the Company:

## Management of people:

- 1. Recruitment and selection;
- 2. Professional qualification and training;
- 3. Promotion and the Careers and Compensation Plan; Salary and remuneration;
- 4. Benefits policy; and
- 5. Health and safety programs.

## Organizational culture:

- 1. Mechanisms to combat inequality practices, gender and race discrimination, bullying and sexual harassment;
- 2. Professional qualification practice in the organization’s relationships network; and
- 3. External and internal institutional advertising.

Cemig’s participation reaffirms its commitment to ensure gender, ethnic and race equity in the Company.

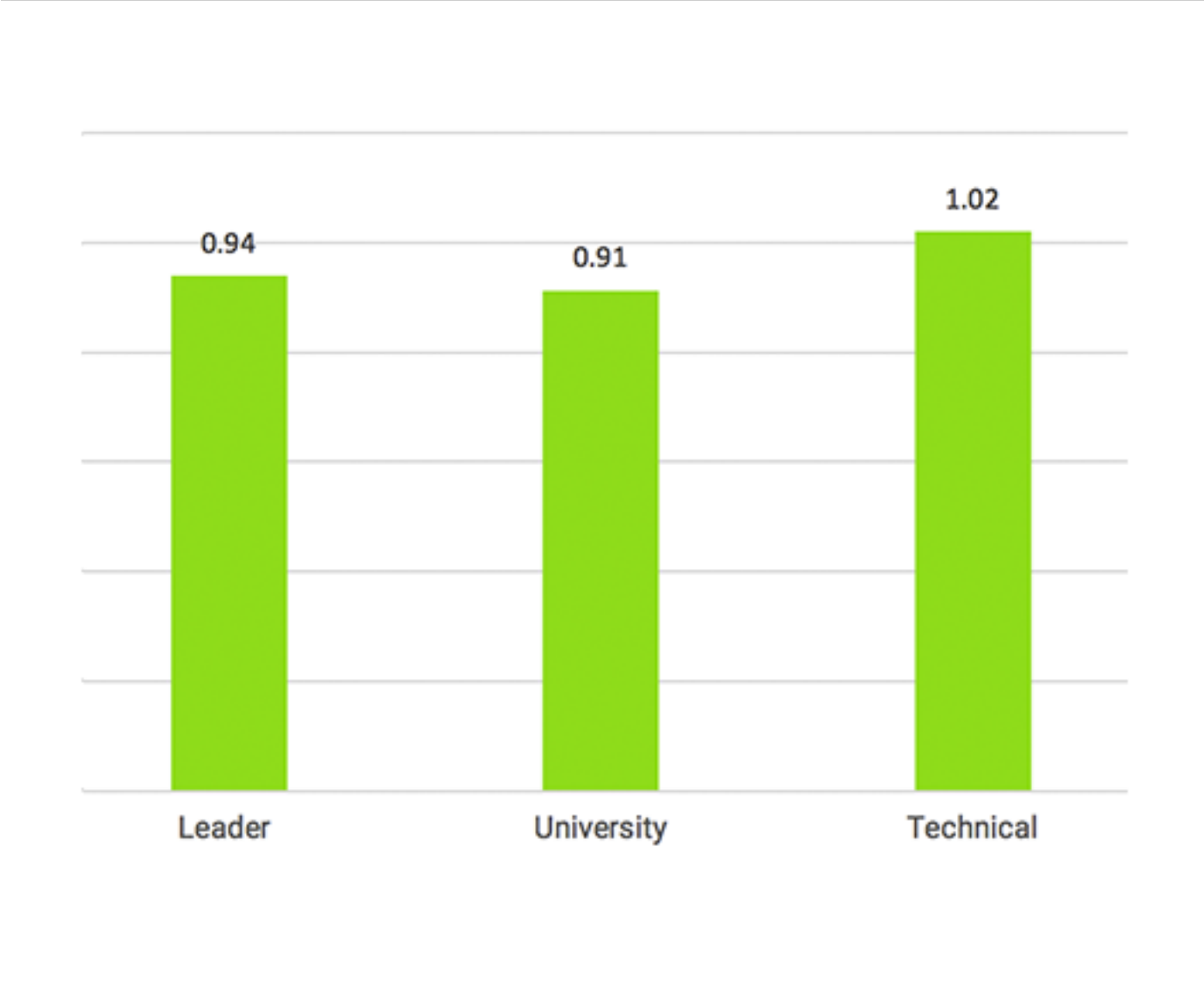
The plan of action developed and implemented by the Women in Cemig Committee has significantly expanded women’s participation in the Company’s corporate issues.

Currently, 13% of the Company’s staff are women; of the technical jobs, 8.8% are held by women; they have 3.8% of the university-level jobs, and 0.8% of the leadership positions. Of the total of women employees, 29% are African-Brazilian or of mixed race.

The ratio between women’s and men’s average salaries is close to one, which is a demonstration that the competencies and the strength of the workforce tends to be valued in a way that is evenly-based independent of gender or location.



Average base salary of women /  
Average base salary of men



At the technical employee level, where there is the biggest difference between remuneration of women and men, this is partly due to the extra pay for hazardous work which when added to the base salary is a part of the final remuneration for people working in risk areas. The higher number of men than women who operate in risk areas results in a difference of the average final remuneration between the genders.

In relation to the difference in remuneration level of employees who take leadership positions and are part of the university-level plan, Cemig has made efforts to bring the ratio between women’s and men’s remuneration increasingly close to one.

In recent decades, subjects related to human rights have gained a space in public policy agendas and become priority in many levels of social action, especially companies.

Thinking of human rights a corporate responsibility transcends mere compliance with rules and laws made to protect the worker, and takes on economic significance since the diversity of opinion and ideas, with the possibility of doing things differently from the competition, fosters growth of the business. In Cemig’s view, a company that does not give priority to diversity in the corporate environment is reducing its growth potential. This takes the subject of human rights further than the question of obeying legal requirements and into the sphere of entrepreneurial strategic planning, not only as a distinctive element, but as a competitive factor. Understanding the importance of the subject as a strategic aspect demanded by today’s world, Cemig has invested, through a co-participation program, 432 hours’ training in a post graduate course on Citizenship and Human Rights in the Context of Public Policies. Two of Cemig’s female employees also took part in the 6-hour WEPS forum Companies for Empowerment of Brazilian Women, in Rio de Janeiro. Another highlight action in 2017 was the due diligence on the subject, described in detail in the item Risk Management.

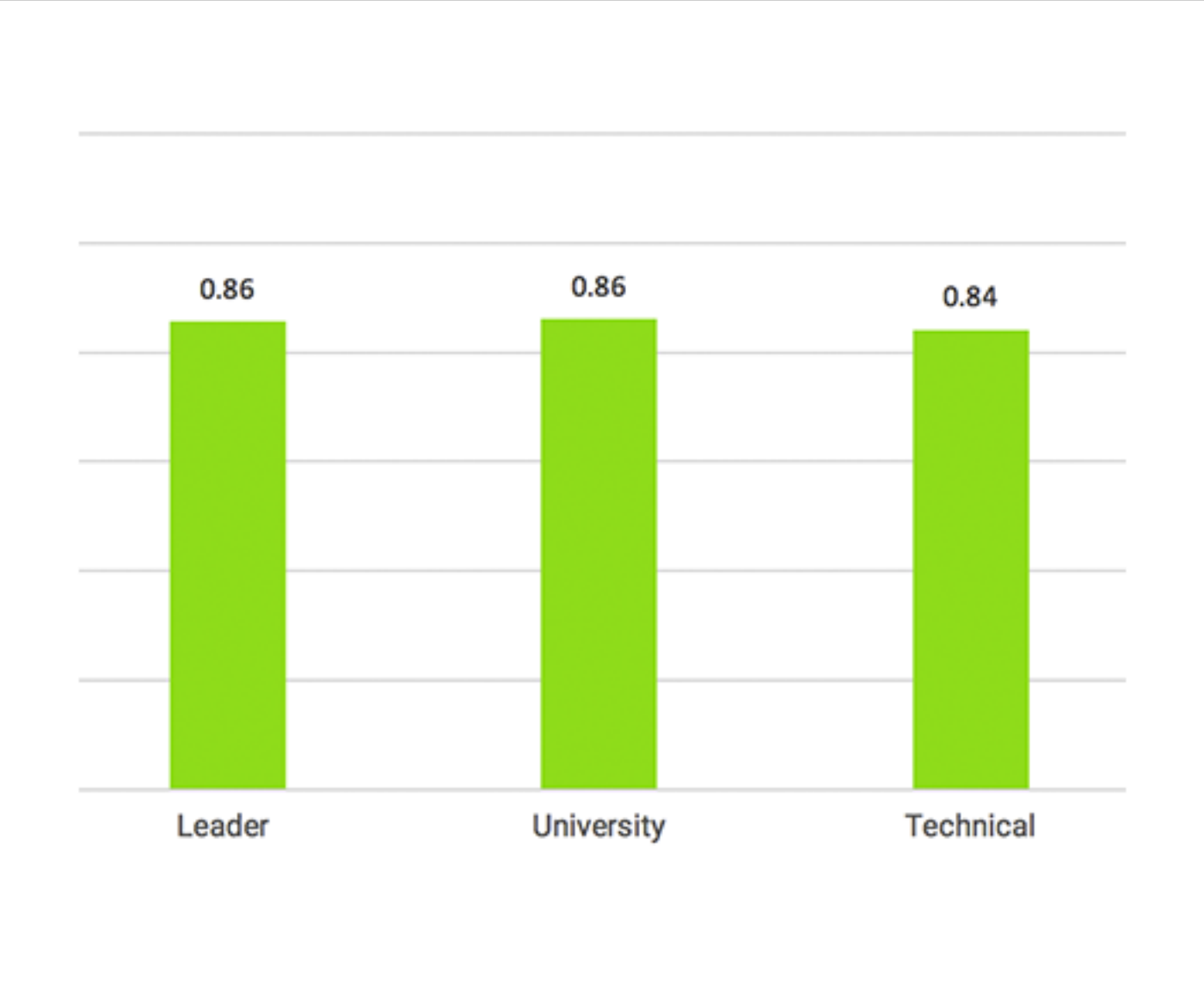
PERFORMANCE MANAGEMENT

LA11

The aim of Cemig’s performance management is to achieve the organizational targets, providing and developing the competencies necessary for its operations. Implementation of an effective performance management process has helped improve Cemig’s performance, through alignment between employee’s activities and the initiatives set out by the Company’s strategic planning, also helping to promote collaborative dialogue and planning of employees’ careers.

A new Performance Assessment cycle was conducted in 2017, focusing on having a sustainable employee development program with all employees being evaluated, structured feedback meetings, and development plans that can express the continued development of each employee. This achievement was aligned with the company's strategic planning, to promote the development of the people in the organization, the need to increase the productivity of the teams, the need to improve the quality of the social bonds between leaders and teams, and the need to re-establish an updated practice of people management.

Average complete compensation of women  
/ Average complete compensation of men



To monitor best market practices and adapt the Company to this process, it was essential to establish a methodology in a way that was coherent with the organizational strategy. To do this, the Company reviewed its performance management, with clear aims: to assess the degree of each employee’s contribution to achieving the established results, aiming to align delivered performance with the strategic planning; to ensure the Company gets to know its employees, with continuing feedback, aiming for success and longevity; and to achieve ordered and well-debated growth in a culture led by results and high performance.

Developed on the basis of deliverables, the performance appraisal reflected what was done and where it was intended to reach. Always aligned with the results of Cemig, the assessment of competences was made taking into account the essential competences:

1. focus on sustainable results;
2. commitment;
3. human relations;
4. communication;
5. health and safety at Work;
6. team work; and
7. alignment.

Worthy of note was the evaluation of 96.4% of the employees in technical and university positions who were actually working in the period. Management positions did not participate in the evaluations (3.6% of employees).

In order to strengthen the bond between leaders and teams, in addition to promoting assertive, frank and respectful collaborative dialogue, another highlight was the training of 20 evaluators in order to help in the performance evaluation process, especially the efficient feedback interview.

Along with the feedback conversation, there was the planning of the careers of the employees, with the construction of the development plan, taking into account practical actions that made it possible to measure the results. As an impact of the people development program, it is possible to highlight the improvement in the relation of employees to the work process; the contribution to the improvement of people and teams; the strengthening of social ties and self-esteem in the work environment; and improved levels of alignment and commitment, with productivity gains.

## ORGANIZATIONAL LEARNING

LA9   EU14   SDG4

Cemig is investing continuously in building and management of its corporate knowledge. As part of this strategy, Cemig’s corporate university, UniverCemig, now 10 years old, is reformulating its corporate training processes. Since its creation it has built alliances and brought together training systems and actions for the Company’s benefit. These changes over the years have included establishing demands, simplification of corporate instructions, and management of critical knowledge for sustainability of Cemig’s businesses.

The training courses available are aligned with the Company’s policies and guidelines, and certified by ISO 9001 (quality of processes) and OHSAS 18001 (workplace health and safety).

The learning solutions are flexible, to meet Cemig’s needs. There is training in risk management, required for certain functions under the Careers and Compensation Plan. Demand for training is delineated for each employee – to correct errors and improve performance – after discussion with the employee’s manager.

2017 saw a robust adaptation of the Company to the macro context and the current situation of the Brazilian power industry. In spite of the loss of four power plants, and more than a thousand employees leaving under the voluntary retirement program, Cemig maintained the investment in training of its employees – including recycling in Brazilian Regulatory Standards NR10, NR33 and NR35, and preparatory courses for the new employees hired under Public Competition 01/2012.

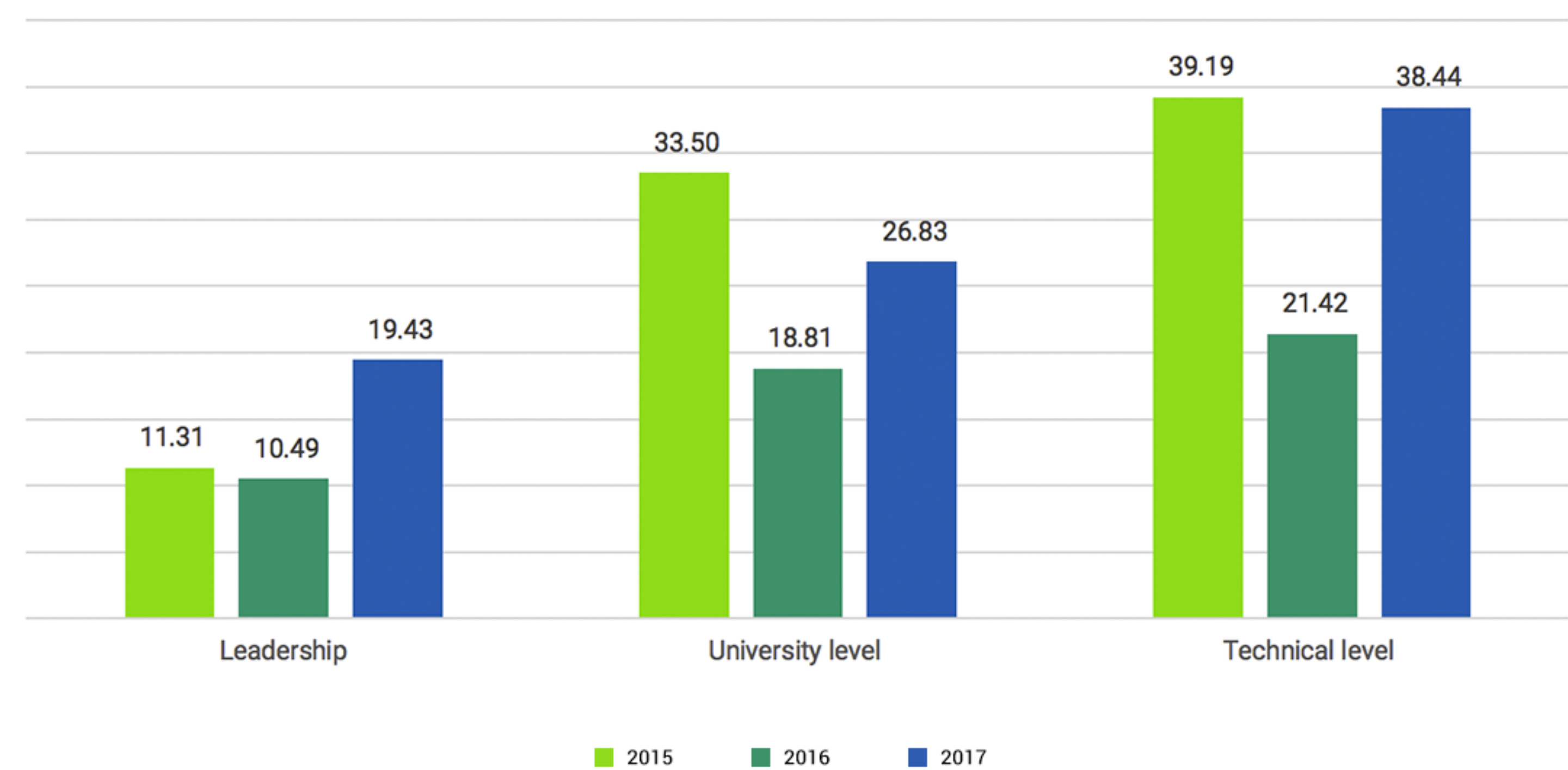
In 2017 UniverCemig held 209,926 person-hours of training for Cemig’s direct employees –comprising 10,788 units of participation, and 35.52 hours of training per employee.

Cemig also provided training to other companies: 3,260 participation units, and 91,658 person-hours of training. The total invested in training and development action was R\$ 3,726 per Cemig employee, a total of R\$ 21.85 million.

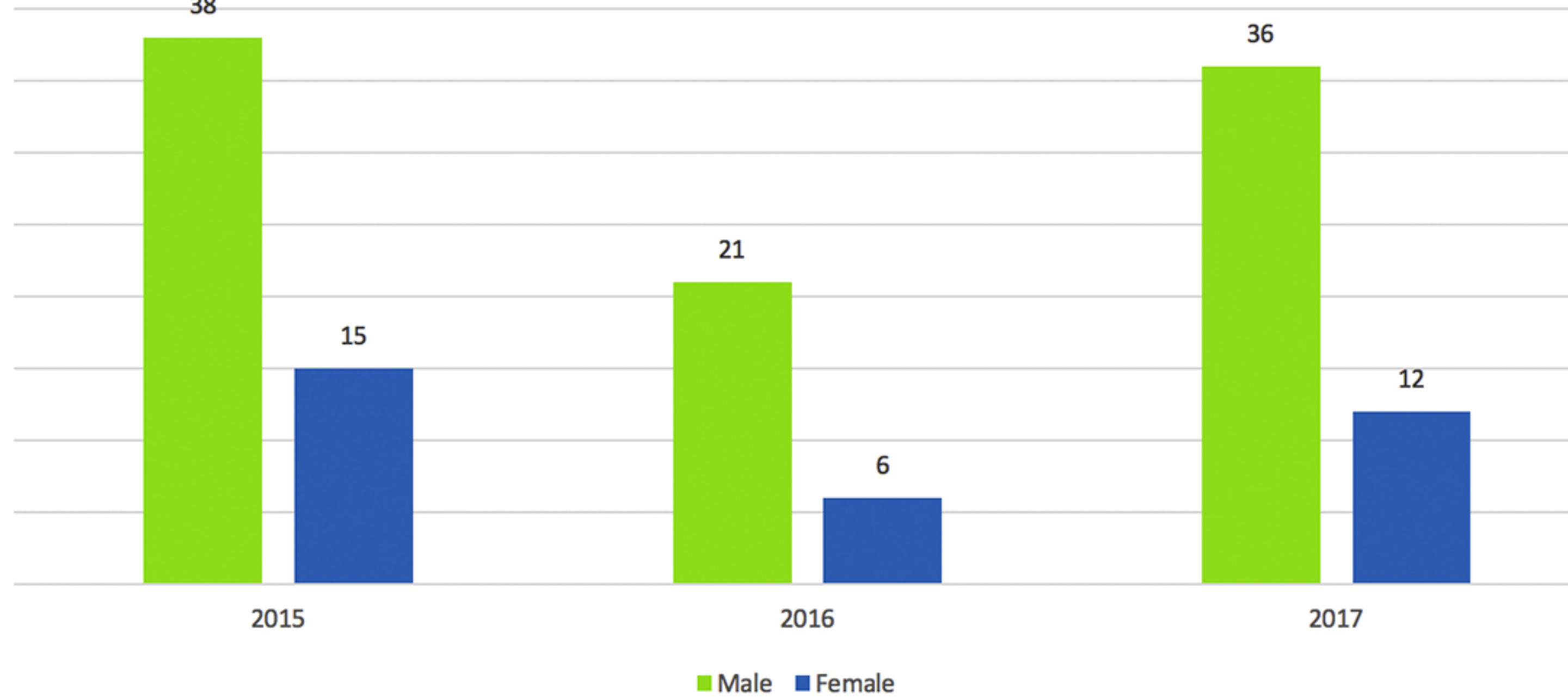
Training in 2017	Number of participations	Person-hours trained
Cemig	10,788	209,926
Other companies	3,260	91,658
Total	14,048	301,584



### Average hours' training, by job type



### Average hours' training, by gender



The 35.52 average hours of training per employee in 2017 was a recovery from 20.56 hours in 2016, and close to the figures for 2015 (38.09 hours) – the year in which one of the most difficult phases for Cemig, and for the industry, began. This recovery in 2017 took place across all the categories of training, but the recovery in number of participation units was highest among the technical staff.

The Training Matrix was revised in 2017, making possible individualized directing of training, improving quality of services. This document orients the training given to the teams of outsourced companies providing services in distribution. Another innovation was the approval of two R&D projects for a total of R\$ 10.4 million, to be invested in UniverCemig over the next 4 years. The two projects are: (1) a digital instruction platform for training in operation of Cemig’s electricity system; and (2) a training method to foster tacit knowledge within the training to operate in the industry.

In online courses, more than R\$ 60,000 was invested serving 11,893 people – including employees, members of the Executive Board, Audit Board and Board of Directors, outsourced workers and interns. The content was most prominently for technical-level staff. This new phase of the remote courses has improved administration of individual and global costs of this type of training, better standardization of information learned, better exchange of knowledge, breakdown of geographical barriers, and systematized management and measurement. This was reflected in the positive results achieved in 2017, compared to 2016: 14,048 participation units, and 301,584 person-hours of training, for Cemig’s own employees and those of other companies.

A highlight was the training in health and safety for outside companies – 23% of all those trained. This table shows some totals:

Type of training	Participation units	Person-hours
Training for construction installers / maintenance of overhead distribution network	31	8,432
Use of motorized saws and pruning	248	5,952
Disconnection / reconnection; replacement of switches and meters in direct metering	140	5,600
Defensive driving of light/heavy vehicles	174	4,872
Recycling for installers – service teams	39	4,680
Training for heads of powerline pathway cleaning teams	66	3,960
Techniques for supervision of outsourced teams	98	3,528
Recycling for installers and team leaders – construction teams	33	3,432

## LABOR AND UNION PRACTICES

G4-11LA4LA8PG3

Through its adherence to the Global Compact, and internally through its Human Resources Policy, Cemig recognizes unions as legitimate representatives of employees, and respects employees’ choices of union affiliation. It also helps unions and employees by discounting membership dues from employees’ salaries. Cemig has a specific department to deal with the relationship with the unions, maintaining constant contact with them, and seeking always to use all means that are acceptable in terms of the business to achieve negotiated solutions in an ethical and respectful way.

Here are some figures on Cemig’s union relationships:

- Cemig currently has 3,279 employees affiliated to unions, or 56% of the workforce;
- 161 active employees are members of the executives of unions representing employees;
- 103 employees have provisional job security due to their union activities;
- obeying ILO Convention 135, unions hold meetings with members on the Company’s premises;
- 26 employees are released full-time for union activities; and
- under a formal agreement, employees on the executives of unions are released two days per month for union activities.

Every year, Cemig takes part in collective negotiations with representatives of the employees to establish the collective work agreements – guided by the aims of helping to foster a good organizational atmosphere, and achieve strategic objectives. There are separate work agreements for profit sharing, based on the guidelines set by the Board of Directors.

Cemig’s collective agreements are negotiated and entered into by a single agreement with each of the unions of the various worker categories – such as engineers, industrial technicians, managers, lawyers, and others – and with unions of electricity workers, who represent the technical operational staff. As a result, 100% of the employees are covered by collective agreements, and have all the agreed prerogatives guaranteed.

The Collective Agreement has nine clauses (Clauses 17, 18, 31, 33, 47, 48, 49, 51 and 52) dealing with occupational health and safety, including the following subjects: commitment to make studies for collective protection solutions, with reaffirmation that protection must include use of IPE and CPE; inspection of outsourced companies for workplace safety; issue of healthy working conditions certificate; access for union managers to meetings of Internal Accident Prevention Committees (CIPAs), and sending of minutes to the unions; passing on of information on frequency and type of illnesses and accidents; notification and convocation of unions in the event of serious or fatal accidents, for them to monitor investigation of causes; and payment of additional wage levels for hazardous and more difficult work.

In the 2017–19 Collective Work Agreement, paragraph 2 of Clause 33 specifies disclosure to employees and their representatives of any introduction of new technologies and/or procedures for automation or centralization of activities, to seek solutions and suggestions.



# OCCUPATIONAL SAFETY, HEALTH AND WELLBEING

## DMA

EU16

LA5

SDG3

Since 2007 Cemig’s Occupational Health and Safety Policy, aligned with principle No.1 of its Statement of Ethical Principles and Code of Professional Conduct, presents one of the objectives of the Company’s strategic corporate map, which is to establish safety as a value in the corporate culture. This strategic objective is monitored by the company’s Accident Frequency Rate (TFA). The policy, which is intensely publicized, establishes the high importance of the subject for the Company’s business and for adequate protection of the whole of its workforce – its own employees, contracted individuals and outsourced companies. Performance in health and safety directly affects the organizational climate, and can also have an effect on the brand and its reputation, and/or cause the company to be faced with employment-law or other legal contingencies.

The following are principles of Cemig’s policy: identification, evaluation and control of risks to work health and safety; proactive prevention; compliance with legislation and internal rules; the worker’s right to refuse exposure to unsafe situations; and the accountability of the worker, whatever his/her hierarchical level, for any omission in the commitment to promote occupational health and safety.

As a consequence of this policy, since 2009 Cemig has had on its intranet a Technical Manual of Health and Safety in the Workplace, which contains a series of internal instructions with which compliance is mandatory. The company holds periodic audits and establishes criteria and procedures for accountability and penalties for non-compliance with the policy, rules, instructions, procedures or orientations. Cemig has further information and campaigns on its website, to incentivize practices that aim to continually reduce the number of accidents and illnesses, for both its own employees and outsourced contractors, as well as contributing to safety in the use of energy by its clients.

Based on OHSAS standard 18001, Cemig’s Health and Safety Management System focuses on prevention of work-related diseases and injuries. This certification covers all the processes related to generation and transmission, and part of the processes of electricity distribution. Both UniverCemig and Cemig’s Property and Industrial Safety Management Unit are also certified in this system. Whether or not an area is certified, an internal procedure – the Hira-Cemig Model – requires that the principal health and safety risks, including psycho-social risks, should be identified and assessed, and that controls established that are able to mitigate them to acceptable levels.

This table shows the coverage of the Workplace Health and Safety controls:

Activity	OHSAS 18001	Hira-Cemig Model
Generation <sup>1</sup>	99%	1%
Transmission <sup>2</sup>	100%	0%
Distribution <sup>3</sup>	5%	95%

<sup>1</sup> As % of total MW generated in the large plants  
<sup>2</sup> As % of total length of Cemig's GT transmission Lines  
<sup>3</sup> As % of all consumers

The Hira-Cemig Model has been adopted since 2015 as being a more precise control in risk management. Other tools help in the process:

- **Risk analysis:** This is carried out by each operational activity. The specific aspects of each situation are taken into account, including workers’ physical and mental condition in the period before they start the activity;
- **The Safety Practices Analysis Monitoring and Auditing System (SIMASP):** This standardizes work safety inspections and feeds data to the Safety Practice Indicator (ISP) – which portrays the degree of compliance with health and requirements in the work of Cemig’s own employees, and outsourced workers.
- **The Job Risk and Accident Monitoring System (SMART):** This is run each month for accident management, generating statistical reports by type of accident.
- **The Environmental Risk Prevention Program (PPRA):** This is required by law, executed annually at each company facility, and consists of anticipating, recognizing, evaluating and controlling physical, chemical and biological risks. It serves as one of the sources for drawing up Hira-Cemig risk profiles.
- **Safety Interlude:** This is a forum for presentation and discussion of issues relating to occupational health, hygiene and safety, held monthly, and used for alignment and dissemination of information; and
- **Internal Accident Prevention Committees (CIPAs):** These comprise representatives of the employees and the employer: they have operational autonomy and work independently on prevention of occupational accidents and diseases. Before each year of office, all members of these committees receive training, through UniverCemig. The program content is defined by law. The Company has 71 CIPAs, covering 100% of the employees.

<sup>12</sup> Data on sub-contractors are managed by the contracting departments.

Other tools for monitoring employees’ health include periodic examinations, medical inventories, management of doctors’ certificates for time off work, psychological evaluations, and social inventories, conducted at the employee’s work location. There are also campaigns and incentives for early detection of heart disease, diabetes, dyslipidemia, breast cancer, prostate cancer, and cancer of the intestine, and flu vaccination. Cemig also has OHSAS 18001 certification.

Cemig also offers employees the following social support programs:

Strategic aim	Programs	Description of program
Fully establish safety as a value in the Company's culture	Professional rehabilitation program	Retraining / rehabilitation for employees whose work capacity has been reduced by accident or illness requiring change of job function. Program is jointly planned as a whole by the medical, psychological and work safety teams, then homologated by the National Social Security system (INSS). Program currently being restructured.
Promote a motivating work environment	Personal and family budget planning program	Through lectures / presentations, social visits and communication, loans etc., aims to raise employees' awareness of the importance of financial planning and control.
	Social initiatives	Aim is orientation and cover of expenses on health treatments for employees who suffer work accidents or are retired due to disability arising from work accident or work-related illness.
	On duty weekend and holidays	On-duty weekends to provide social care to employees suffering serious accidents and family members of employees who have had fatal accidents, whether work-related or not.

In light of technological developments, with a consequent need for review of working methods, the Company maintains internal committees that address technical matters directly or indirectly related to work health, hygiene and safety, in addition to actively participating in a variety of working groups at Brazilian and national level, and ABNT (Brazilian Technical Standards Association) committees and study groups.

In 2015, the Company joined the Ibero-American Social Security Organization (OISS) and the Ibero-American Social Security League. In parallel, to build a strategy for workplace health and safety, focusing on reduction of serious and fatal accidents, the Integrated Work Accident Risk Prevention Group was created, with the participation of varied hierarchy levels. Since then it has met at least every two weeks, integrated with the various business areas. At the end of 2017 this group had its 75th meeting, bringing the number of subjects covered, related to Workplace Health and Safety, to 80.



In December 2015 representatives of the OISS visited Cemig to get to know its facilities and processes, to prepare a workplace health and safety management improvement plan. The result of this visit is their Integrated Work Risks and Accidents Plan, which they presented to the members of the Integrated Work Risk Prevention Work group. It contains 18 actions, with five main parts:

- 1. Commitment by the leadership.
- 2. Information management systems.
- 3. Work Safety training and qualification for technical and operational staff.
- 4. Safety Conditions of the employees of outsourced companies.
- 5. Traffic safety.

In compliance with Item 3, 9 employees did an exchange course with OISS in Madrid, in the following modules:

- *Máster en dirección y gestión de los sistemas de seguridad social: 1 lawyer, 1 analyst and 1 manager;*
- *Máster en prevención y protección de riesgos laborales: 3 engineers and 1 manager; and*
- *Máster en dirección y gestión de servicios de salud: 2 nurses.*

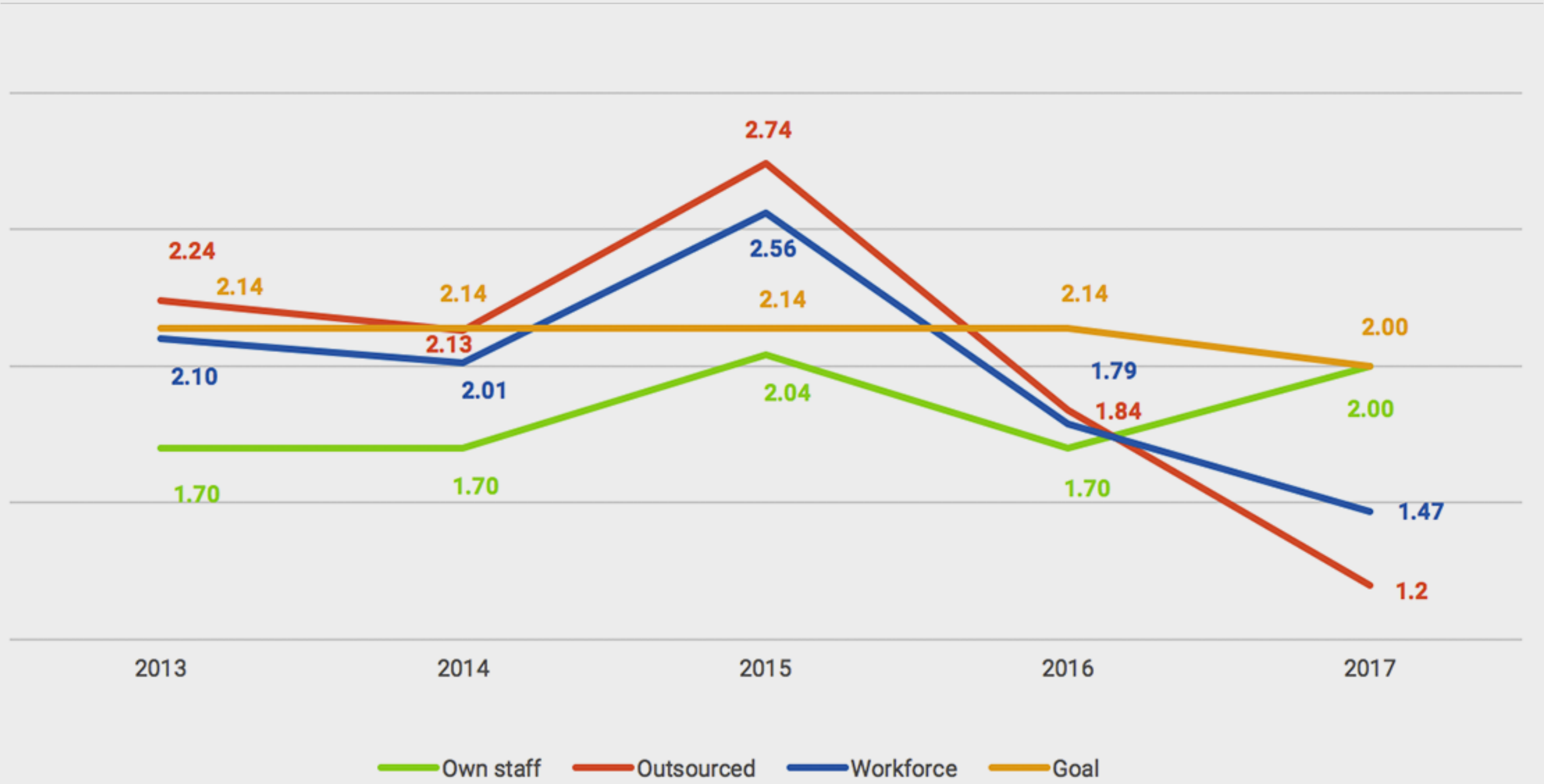
## Results of indicators

LA6

In 2017, Cemig’s indicator of Frequency of Accidents with Time off Work (Frequency of accidents with time off work TFA) for the workforce was 1.47 per million hours worked, 18% less than in 2016, and 26.5% lower than the limit of 2.00 set by the Company.

This reduction reflects good results with outsourced workers, for whom the TFA was reduced by 34.78% from 2016.

### Frequency of accidents with time off work – TFA Accumulated in the year



Cemig has a computerized system in which all accidents occurring on the Company’s premises involving its own staff, subcontractors or subcontracting firms are registered, as are accidents involving the public in the Company’s concession area.

These systems monitor the Accident Frequency and Severity Rates, with the adoption of the guidelines referenced in Brazilian Standard ABNT NBR 14280.

Type of accident	Category	2015	2016	2017
Work accidents without lost time	Employees	39	24	32
	Outsourced	175	122	76
	Total	214	146	108
Work accidents with lost time	Employees	28	25	20
	Outsourced	106	52	36
	Total	134	78	56
Occupational illnesses	Employees	3	-	-
	Outsourced	N.A.	N.A.	N.A.
	Total	N.A.	N.A.	N.A.
Days lost	Employees	398	378	529
	Outsourced	2,387	1,596	680
	Total	2,785	1,974	1,209
Absentee rate	Employees	1,23	0,90	1,065
	Outsourced	N.A.	N.A.	N.A.
	Total	N.A.	N.A.	N.A.
Work-related fatalities	Employees	-	1	-
	Outsourced	5	1	2
	Total	5	2	2

Following five fatal accidents to employees of outsourced companies in 2015, Cemig perceived the need to upgrade various actions and programs relating to occupational health, hygiene and safety, even though the accident indicators have shown a continuous reduction trend in recent years, both for Cemig’s own employees and outsourced workers.

The figures for 2017 are the result of a group of actions structured and implemented over the year by the Specialized Safety Engineering and Work Medicine Services (SESMT), in which Cemig employees and outsourced workers were engaged at all hierarchy levels.

Reduction of the rates of work accidents and illnesses not only affects the TFA but can also reduce the social security contribution paid by the Company, since the Accident Prevention Factor (FAP) takes into account, among other items, work-related accidents and illnesses and their degree of severity.

The two deaths in 2017 were in outsourced companies – and both were in traffic accidents.

As well as the external campaign, a process of internal dissemination centered on the work of the Accident Prevention Committees (CIPAs) was created to orient the Company’s entire workforce.





Samuel de Almeida Fernandes, administrative management technician receives material from Cláudio Mauricio Lopes, a service provider on the docks of Cemig's headquarters.

# SUPPLIERS

DMA

## SUPPLIER CHAIN MANAGEMENT

G4-12	HR4	HR5	HR6	EC9	CG5	CG6	CG10
LA14	EN32	EN33	HR10	HR11	LA15	SDG8	SDG12

Three main documents – Cemig’s Supply Policy; its Statement of Ethical Principles and Code of Professional Conduct; and its Anti-fraud Policy – orient Cemig’s relations with the supply chain, backed and expressed by the Supplier Relations Manual – which is permanently available on Cemig’s Suppliers’ website – inaugurated in 2009 during the First Cemig Suppliers’ Meeting. (<http://compras.cemig.com.br/PortalPublico.aspx>).

Based on these policies, principles and guidelines, five priority commitments have been set as a strategy for managing the supply chain: (1) commitment to the public good, and respect for the principles of legality; (2) commitment to business ethics; (3) commitment to equality of treatment; (4) commitment to transparency; and (5) commitment to social and environmental responsibility. These commitments reflect the principles of the Global Compact of which Cemig has been a signatory since 2019. There is an interesting discursive article on the subject at: <http://www.pactoglobal.org.br/artigo/70>.

Cemig’s principal activity in relation to its supply chain is preventive (during the registration phase); but there are mechanisms for mitigation (information of general supply clauses, fines, and cancellation of contracts) and remediation (for example follow-up on termination of employees of sub-contracted companies).

Additionally, formal identification of risks to sustainability in the supply chain has been instituted, in a procedure that is applicable to all processes in progress at Cemig and its subsidiaries. This assessment describes the economic, environmental and social responsibility risks to which the Company is exposed due to the actions of suppliers. These risks could cause damage to Cemig’s brand, image or reputation in the eyes of the many stakeholders, or losses relating to the market or the Company’s competitiveness, with the possibility even of joint criminal and civil liability. Cemig also seeks to use management of the supply chain as an opportunity to improve its financial performance over the long term.

Accordingly, the Company has identified which of its suppliers have high sustainability risk, considering the potential negative impacts that could result from any serious non-compliance. Identification of materials, services and suppliers that pose a high risk to sustainability is reviewed annually, prompting follow-up and oversight of suppliers from the registration stage through to technical evaluation and oversight of contract execution. In 2017, of the 763 suppliers with contracts in force, 126 were defined as being of high sustainability risk (including contractors providing Privately Constructed works services) and are receiving special attention from the areas that contracted them. Cemig's critical suppliers are those whose goods or services have a significant impact on the competitive advantage, market success or survival of the company. Reasons may include that these suppliers provide goods or services at high volumes, that they provide critical components or that they are not replaceable. In 2017, 126 critical vendors were identified.

For already approved suppliers, there are extensive requirements and diligence involved in mapping potential risks, and the probability of their realization, and their tangible and intangible impacts in terms of financial value or of strategic importance to the Company. This analysis is conducted to measure risks and losses that could result from failures, in the supply chain, to uphold environmental, social and governance legislation and requirements. Another means employed to monitor this compliance is inspection visits, by designated inspectors, on receipt of the material acquired.

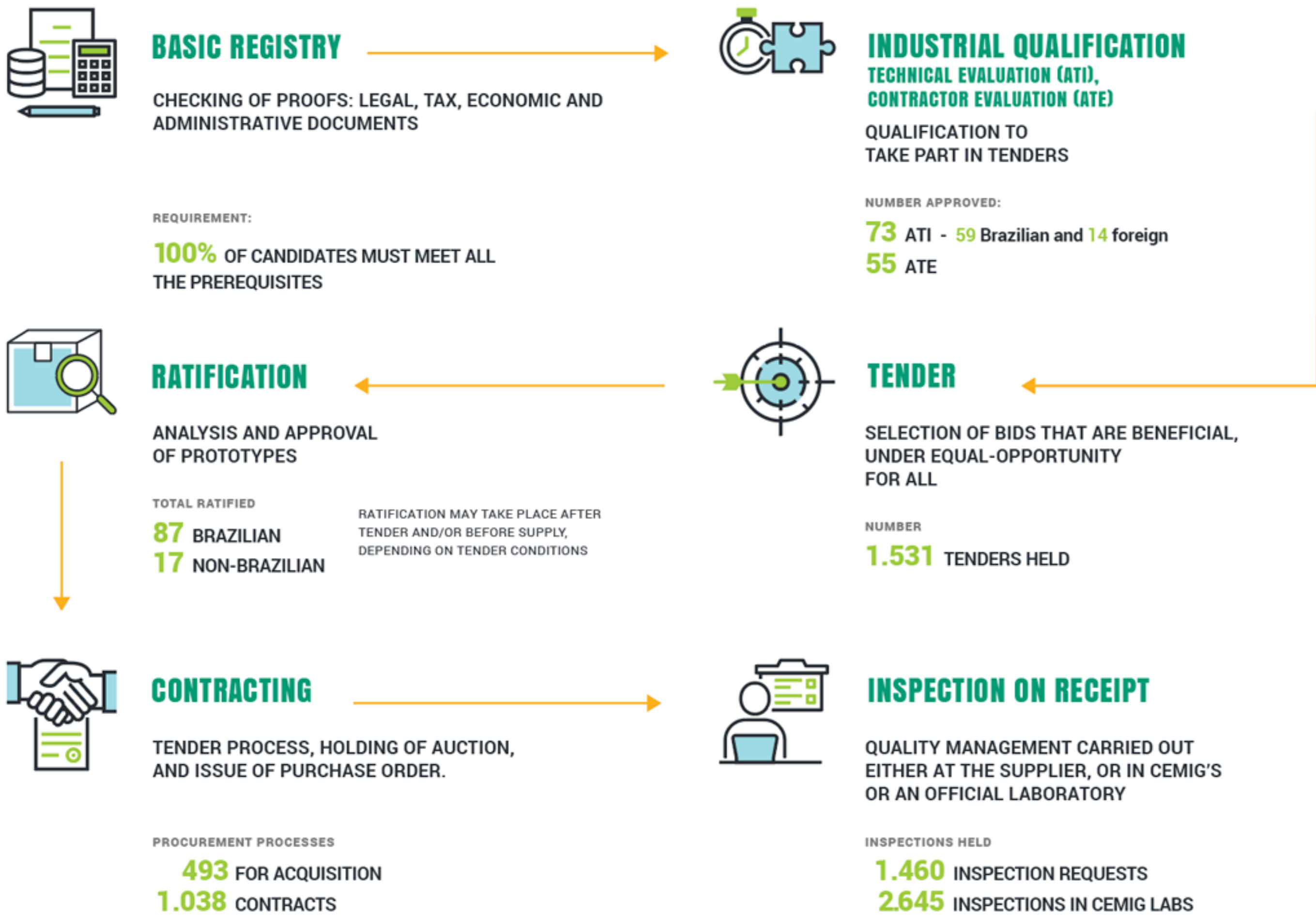


Among factors considered as having the potential to generate negative impacts in the supply chain are: environmental operating licenses, products and services, waste management, water use permits, fundamental human rights considerations, child labor and compulsory labor, freedom of association, working conditions, occupational health and safety conditions, business ethics, corruption and anti-trust practices. To prevent and mitigate risk, the Company adopts risk management measures that, primarily, include transparency in all bidding processes (<http://compras.cemig.com.br/PortalPublico.aspx>). In addition, Cemig encourages improvement in service providers' own management through a contractual clause requiring amortization of any penalty payments by as much as 50%, if compliance is proven with requirements such as: ISO 9001, ISO 14001 and OHSAS 18001 certifications; proof of training of technical staff; and having service managers enrolled in or graduated from corporate management courses.

For suppliers with low performance grades or showing negative or potentially negative conduct in assessments, inspections or audits, penalties may be imposed in the form of penalty payments, warnings, meetings, cancellation of orders or contracts, or revocation of approvals; or internal proceedings for suspension of registration – depending on the seriousness and/or recurrence of the circumstances in question.

In 2017 Cemig opened 27 administrative proceedings, of which 22 were for contractual default (noncompliance with deadlines, non-delivery of subject of the contract, irregular service), 1 for unsatisfactory result of performance, and 4 for suspicion of falsification of documents and fraud (2 of these for unauthorized sharing of structures). No supplier was subject to proceedings for serious accidents, nor for non-compliance with human rights.

# RELATIONSHIP CYCLE





# HIGHLIGHTS OF CONTRACTING PROCESS

The cycle of relationship with suppliers begins with a rigorous registration process, in which all companies wishing to be suppliers must satisfy legal, technical, financial, social, environmental and health and safety criteria to participate in tenders. The Company does not record how many companies are not accepted.

Bids must be in compliance with the terms of calls for bids, and the required documents must be submitted upon signing of the contract, which includes environmental, social and governance clauses. Candidates must pass the Technical Industrial Evaluation (ATI) – for suppliers of materials, or the Technical Contractor Evaluation (ATE) – for service suppliers. These technical evaluations require compliance with the criteria described above in the production of goods and provision of services, and Social-environmental Responsibility practices specified in the SA 8000, ISO 14001, OHSAS 18001 standards and the Global Compact. In 2017, 73 ATI visits were made for registry suppliers, and 60 ATE visits, all of them including environmental requirements.

Selection of suppliers is by competitive bid, since the Company is subject to Law 8666, and therefore a bidder may be excluded if not compliant with legal requirements – such as the law against child labor, or other degrading or compulsory labor, and the clauses protecting human rights. Cemig encourages certain other supplementary items, such as implementation of ISO standards for Social and/or Environmental Responsibility, so that its value chain will disseminate good practices. Due to being subject to this legislation, Cemig does not practice direct contracting with suppliers, nor preferential contracting for local suppliers. However, a large number of local suppliers are registered on the website, and 66,079 of the 82,885 suppliers registered are from the Company’s home state of Minas Gerais, or 80% of the total. In 2017 alone, a further 1,848 suppliers were registered. The proportion of outlays with local suppliers in 2017 was 0.07% for acquisition of materials, and 78.52% for services, so that overall 65.29% of expenditure goes to Minas Gerais suppliers.

Suppliers	2015	2016	2017
Total suppliers registered	79,519	81,354	82,885
Total local suppliers registered	63,547	64,800	66,079
Local suppliers as % of total expense	75.95%	29.84%	65.29%

2017 there was a total of 891 international suppliers

As described in the chapter on Ethical Conduct, as from January 2015 all contracts signed between suppliers and Cemig require the supplier to undertake: “to be aware of and comply with the rules specified in Law 12,846 of January 8, 2013 (the ‘Anti-corruption Law’); to refrain from committing any acts that may tend to harm the public administration, and to denounce any irregularity of which it becomes aware, through the channels made available by Cemig.”

The areas responsible for contracting check all these requirements during execution of contracts, to see whether the conditions laid down in the call for bids and the contract are being maintained, in all the supply chains. Also, payment for services rendered is contingent on submission of documents proving payment by the contractor of the employment-law-related charges on payroll, and of the employees’ salaries themselves – so that contractual penalties can be applied if a supplier is not meeting its social obligations.

To measure contractors’ performance Cemig uses the IQSC (Contracted Services Quality Index) indicator. In 2017 this was 83.61%, within the target range. In spite of the effects of macroeconomic difficulties on contractors, this was an improvement on 2016, due to various actions by Cemig jointly with the service providers to reach the 80% target in 2017. The lower performance reflected termination of periods of validity of numerous contracts in the year. This indicator combines the quality indicators with social and environmental aspects.

	2015	2016	2017
IQSC Service Quality Index	67.43%	90.46%	83.61%

To ensure supplier oversight, Cemig maintains its practice of daily inspections of contractors: there were 14,072 safety inspections to analyze safety practices, which can be expressed as a total of 173,969 man-hours of inspections. Service quality inspections, which are also routine procedures, to assess the quality of services and waste management, totaled 10,014 procedures – summing the figures for emergency and commercial services.

Throughout 2017 Cemig maintained – and monitored contractors’ compliance with – its requirement for obligatory declaration by new suppliers (and those renewing registration) that they do not employ minors under 18 on night, hazardous or unhealthy work, nor employ minors under 16 for any kind of work (Law 8666/93).

Another form of monitoring, evaluation and control of the supply chain is internal audits. These are done by audit teams independent of the supply chain, and independent of contract management, for compliance with ISO 9001, ISO 14001 and OHSAS 18001.

This is a summary of the data:

Indicators: Supply chain management

Indicators Supply chain management	Year		
	2015	2016	2017
Total suppliers registered	79,519	81,354	82,885
Local suppliers registered	63,547	64,800	66,079
Total suppliers with current contracts	644	636	763
Critical suppliers with current contracts	40	84	102
Expenses with suppliers (R\$ thousand)	314,766	348,347	424,120
Local suppliers as % of total expense	75.85%	29.84%	65.29%
Technical (ATI) inspections - total visits	77	89	73
Contractor (ATE) inspections - total visits	42	55	55
Safety inspections - analysis	9,697	9,697	14,072
Service quality - IQSC	67.43%	90.46%	83.61%
Supplier performance index - IDF	80.65%	81.52%	80.02%
Total no. of administrative cases	33	31	27

And this table shows targets for the year 2021:

Type of indicator	Indicator	2021 target	Status in 2017
Security	Accident rate - outsourced (TFTC)	2.50	1.29
	Severity index (TG)	230	224
	Other safety indicators	94%	0.90
Quality	Quality indicators	96%	*
Lead time	Leadtime indicators	89%	*
Environment	Waste management quality index	98%	*

\* indicators are being implemented and there is no status for 2017



# COMMUNICATION CHANNELS WITH SUPPLIERS

Cemig has created a Procurement Website for supplier engagement. It is an open, direct-interaction channel that gives access to all procedures for tender processes, and announces contracts made – enabling suppliers to interact and follow up on processes and results. It also enables suppliers to post proposals and bids, register authorizing documentation and take part in electronic auctions.

The site is accessible to the public and allows stakeholders in general to follow these processes, contributing to greater transparency and authenticity. As well as these means of communication, the bottom of each email from the suppliers departments carries a link with an email address for complaints, praise, etc.

Emails of complaints and suggestions are another standard communications link available in all management units engaged with suppliers.

Cemig has now restructured and standardized this system for e-mail communication – for improved visibility, and to encourage use by other stakeholders. The most frequent requests have been for explanations and information about tenders and contracts. Further means of interaction with suppliers are: phone, email, publications in the Official Gazette (Diário Oficial), Cemig’s Procurement Website (PEC) during online auctions; fax and correspondence; and meetings and visits, to address specific questions.

All requests for information received through any of the channels are analyzed and forwarded for appropriate treatment. In 2017 there were no complaints by suppliers.

## The Cemig Suppliers’ Award – the 2017 competition

As a way of encouraging quality in provision of goods and services, and recognizing coordination between suppliers and the Company in reaching common objectives, a number of suppliers of materials and services were honored at the Cemig Suppliers Awards, held on July 12, 2017.

In 2017, a total of 763 suppliers received purchase orders or contracts from Cemig. Of these, the awards singled out 71 suppliers for performance based on criteria such as quality, safety, guarantees and price. Of this total, 44 achieved the grade of excellence in ‘Assured Provision of Materials.’ They won plaques in recognition of their services. Suppliers of material who received the ‘Assured Provision of Materials’ accolade, as well as receiving trophies, also received certificates exempting their deliveries from prior inspection of goods by Cemig for a period of one year.

Three suppliers were recognized for the significant contribution to society made by their practices in Social and Environmental Responsibility, and Job Safety. The recognition for job safety is a feature introduced to these awards in 2013. For future contracts, there is the possibility of creating an ‘Energy Efficiency’ category, with criteria yet to be set – and an award in 2018.

	2015	2016	2017
Total suppliers responding	644	356	763
Suppliers recognized for performance in quality, safety, guarantee and price	65	70	71
Suppliers achieving "Assured Provision of Materials " excellence assessment	38	39	44
Suppliers recognized for practices in social responsibility and work safety	3	3	3





Campos de Luz Program, a partnership between Cemig and city halls of Minas Gerais State, for lighting amateur football fields. In the picture, Willian, boy from Dolores do Indaiá-MG.

# COMMUNITY

## RELATIONSHIP WITH THE COMMUNITY

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Cemig’s strategic positioning in relation to local communities where it operates is translated into its Policy on Communication with the Community. This document covers social, environmental and economic aspects to be implemented in all the Company’s projects, in which it sees communication and social engagement as the bridge to ensuring human rights, sustainability and corporate social responsibility.

This policy also reiterates Cemig’s commitment to certain fundamentals and assumptions that orient its decisions on strategy and communication: transparency of management, the sense of shared responsibility, and stimulus for local economic and social development. It also aims to create and enhance instruments for communication between various segments of communities and the Company’s areas of operation – generation, transmission, distribution and energy development.

In tandem with this Policy, Cemig’s Company Communication Plan has a group of strategies for relationship with the community of stakeholders, and guides a social-environmental diagnosis that is prepared for each project or program.

Two other documents orient best practices in the relationships with communities: the Instructions on Social and Environmental Negotiations (contained in Cemig Internal Instruction 48 – ‘IS48’) and in the Code of Ethics.

Cemig needs also to communicate with social movements, and interact with their demands and feelings. Examples are the Movement of People Affected by Dams (Movimento dos Atingidos por Barragens, or MAB), the Landless Rural Workers’ Movement (Movimento dos Trabalhadores Rurais Sem Terra – MST), communities that have been relocated, and those characterized as low-income. To engage and serve them – to interact with demands of a political character, and those involving negotiation – Cemig has recently created a specific management unit, based on its community relationship guidelines.

A wide range of channels are used in this engagement: direct contact with its local representatives; workshops; seminars; circuits of meetings; face-to-face visits; in-person meetings; participation in decision-making forums; and visits to Cemig’s units. Opinion surveys have assessed these tools as efficient in disseminating knowledge and offering opportunities for dialogue about operations, projects and changes in the company that have an impact on communities, and in taking on board principal demands from communities in areas surrounding Cemig projects.

Below we describe some highlight of Cemig’s community programs and projects for 2017.

### The Proximidade (Proximity) Program

This was created by Cemig to form a closer relationship with communities close to plants operating under Cemig concessions, and along with other Cemig programs to take technical knowledge to them and promote their social development. Meetings are held in which specialists give objective presentations to explain operational aspects of reservoirs, make the initial preparation of the Emergency Action Plan (PAE), publicize Cemig’s environmental actions at dam reservoirs, and deal with dam safety and secure coexistence with the electricity system.>

In 2017 meetings were held with the communities surrounding the following generation plants: Irapé (in the Alto Jequitinhonha region), Cajuru and Gafanhoto (in the Eastern of the state), Queimado (in the Northeast), Rosal (on the border between Rio de Janeiro and Espírito Santo states), Emborcação and São Simão (on the border with Goiás) and Jaguará (on the border with São Paulo state). They covered 27 counties directly related to operation of reservoirs, in seven events, with estimated average attendance by 450 people, including journalists, leaders, representatives of institutions and opinion formers.

In the events at the Emborcação and São Simão plants, the Cemig team introduced the managers of the new holders of the generation concessions – recently acquired at government auctions.



## The Taquaril Environmental Project

This initiative by various areas of the Company has so far taken approximately 160 children from poorer regions of the municipalities of Sabará, Nova Lima, Santa Luzia and Belo Horizonte to see the substation located at Nova Lima.



Sapling plantation workshop



Visit to the Taquaril Substation

Lectures and presentations were given to raise pupils and teachers’ awareness of preservation of the environment, and the dangers of burning vegetation under transmission lines, and flying kites close to the electricity network – and to encourage them to disseminate knowledge of these widely in their communities.

After the lecture, an environmental education workshop introduced children to recycling of materials, and took them on an ecological trek route, showing them native species in the environmental reserve. At the end of the visit, the children planted a fruit tree and received gifts, including materials with information on the visit, as input for essays to be written for an essay competition.

The Taquaril substation occupies 50.6 hectares on the 3-county border between the municipalities of Sabará, Nova Lima and Belo Horizonte. The environmental station is close by, surrounded by a spring, cerrado vegetation, riverside forests and animals endemic to the region. Several times, burning of crops in this area has caused disconnection of the 345kV Barreiro–Neves transmission line and the 138kV Santa Efigênia transmission line. This is important because the substation supplies 50% of the central region of the city of Belo Horizonte, and 35% of the city’s greater metropolitan region.

The project was restarted in 2017. But since 2014 – the last date it was last active before that – data show a saving of R\$ 715,000 in penalty fines not charged by Aneel for outages.

At the Irapé Hydroelectric plant, services to the communities affected by the reservoir, a part of the conditions of the license, continued with Cemig delivering 643 property ownership documents to people who have been resettled. Cemig continued efforts to obtain all the legal, tax, environmental and social input necessary to ensure delivery of these documents, and regularization of farms, for all those affected by construction of the plant, in 2017. Meetings were held with people being resettled throughout the whole of the process of regularization, to establish bonds of partnership enabling all the demands of the community to be met.

## Emergency Action Plan (PAE)

Under Law 12344/2010 and Aneel Resolution 696, any entrepreneur, private or governmental, that has property rights on land where a dam or reservoir is located, or that commercially operates the dam whether for its own or for the public benefit, has the obligation to prepare an Emergency Action Plan (Plano de Ação de Emergência, or PAE).

One of the stages of planning must include engagement with stakeholders, which in Cemig’s case involves the communities in the whole of the areas covered by its 49 dams.

An education and communication program on dam safety must be developed, to make the public aware of the importance of dam safety, including:

- i. Decentralized actions to raise awareness and knowledge on dam safety.
- ii. Creation of teaching material.
- iii. Maintaining a system of publication of information on safety of the dams in question.
- iv. Partnerships with teaching and research institutions, and technical associations related to dam engineering and similar subjects.
- v. Provision of an Annual Dam Safety Report.

All these actions are to be included in the Cemig Dam Safety Communication Plan, which will be developed in stages over the next five years.



# TERRITORY MANAGEMENT

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To build substations, power plants or substations, or implement distribution or transmission lines or distribution networks, Cemig occasionally has to acquire the property of residents, or rights of way. To guide this process there is Aneel Normative Resolution 560 of July 2, 2013, providing orientation on areas declared to be of public utility for the purposes of expropriation or establishment of rights of way needed for installation of electricity generation, transmission and distribution facilities.

Whenever there is a need for acquisition or compulsory purchase of a real estate property, feasibility studies carried out by dedicated internal teams identify in advance the people who will be affected by the project. These studies ascertain whether the options for routes will affect preservation areas, legal reserve areas, or sites for new housing or other benefit; whether owners accept the impacts on their properties, amounts of compensation to be paid, and other important data. The best route is chosen after analysis of these studies.

Cemig respects the individual integrity of each individual citizen’s rights, the history and culture of the communities affected by projects, and also values amicable negotiations – seeking to compensate property owners at fair market price, based on valuations drawn up in accordance with Brazilian Technical Standard NBR 14653.

In 2017, a total of 550 negotiations were carried out with proprietors for implementation of 91 projects of Cemig D, and 2 projects of Cemig GT, involving a total of approximately R\$ 4.5 million.

## Human occupation under high voltage overhead power lines

Human occupation of the security pathways under high voltage overhead power lines is a problem that occurs in various Brazilian concessions, and among other factors reflects the socio-economic conditions of a part of the population. Most of the occupations are by low-income families, without housing options, who see in these pathway areas an available space where they can build, even if under insecure conditions of life and safety.

Cemig identifies the need to act to achieve safety solutions for this population as part of its strategic planning – to reverse this critical situation in which transmission and distribution power line pathways are occupied.

It has contracted services to monitor and map these pathways since 1999. In 2002 it published a specific policy on the subject, and created the Transmission Power Line Pathways Invasion Risk Monitoring Committee, directly responsible to the CEO’s office, with a specific management unit. This aims to prevent expansion of these occupations, and reduce them over short, medium and long timescales, in partnership with municipalities under working agreements for these families to be resettled in dignified housing. In 2017 there were 85 court actions for possession, and 12 residential structures were demolished or removed.

A work plan was also approved to review the technical specifications for contracting of services in this area. The Committee was reactivated, and a task force formed to bring the main operational management units involved together for periodic meetings.

Diversions of 138kV lines have so far been approved in seven areas of occupation in the municipalities of Belo Horizonte and Juiz de Fora. The first is in the Santa Rita district of Juiz de Fora, planned for the start of May 2018.

# CORPORATE CITIZENSHIP AND PHILANTHROPY

SDG1SDG3SDG4SDG10SDG11

Cemig creates value for the public by uniting philanthropic and corporate citizenship aims with business objectives, supporting development in communities where it operates. As the Company describes it, "[Social responsibility is incorporated into Cemig’s day-to-day activity as part of its Mission, placing the subject at the center of its strategy.](#)"

It does this with a strategy articulated in partnership with government (Minas Gerais Departments of Health, Education, and Culture, and national Ministries of Sport and Health), the municipalities/counties (local Councils for Rights of Children and Adolescents), and philanthropic institutions.

There is also engagement of employees, through the Corporate Volunteering Program, in line with the [Human Resources Policy](#) in which the Company “considers its Human Capital to be the principal factor in achieving its commitment to economic, social and environmental sustainability”.

Cemig also enables the public to support charitable organizations, by enabling consumers to make donations, through the Sponsorship Program, via their electricity bills.



Operating in an emerging market, Cemig has defined the priorities of its strategy for corporate citizenship and philanthropy as follows:

- social and educational development;
- strengthening of the cultural sector; and
- growth in sports, strengthening the brand image, and reputation.

These priorities are aligned with the following UN Sustainable Development Goals (SDG)<sup>11</sup>:

- **SDG1** "End poverty in all its forms everywhere."
- **SDG3** "Ensure healthy lives and promote well-being for all and all ages."
- **SDG4** "Ensure inclusive and quality education for all and promote lifelong learning."
- **SDG10** "Reduce inequality within and among countries."
- **SDG11** "Make cities inclusive, safe, resilient and sustainable – and especially: **Goal 11.4:** "Strengthen efforts to protect and save the world’s cultural and natural heritage."

<sup>11</sup> The Sustainable Development Goals were adopted by all members of the United Nations Organization in 2015, and adopted as a worldwide agenda at the 2015 UN Sustainable Development Summit in September of that year, as a sustainable agenda to guide society as a whole until 2030. They comprise 17 objectives, and 169 targets, which can be divided into 5 areas: People, The planet, Peace, Prosperity and Partnerships.

Cemig’s [Sponsorship Policy](#) reiterates the Company’s commitment to transparency in its management, in that it makes public the assumptions and principles that guide its decisions on sponsorships, support programs and partnerships, and its use of federal incentive laws in its various social, cultural and sports investments.

The document also underlines Cemig’s commitment to society, investing in culture, education, health and sport, as well as contributing to permanent preservation of cultural heritage.

Cemig also has an Internal Service Instruction (IS 58 – Preparation and Management of Corporate Social Responsibility Projects) which establishes duties and responsibilities for all agents involved, and the indicators to be used to measure the effect of programs, aiming to ensure sound management of social projects.

The following are some of Cemig’s [outstanding programs](#) to enhance social and educational development:

- The Donations Program;
- Sponsorship Programs;
- Corporate Volunteer Programs, including the AI 6%;
- The Fields of Light Program;
- Health Projects; and
- The [Energy Efficiency Program](#).

In the Donations Program, Cemig gives discounts of up to 25% on electricity bills, subject to a ceiling, to philanthropic institutions that provide social and health assistance free of charge. The ceiling depends on the average consumption of energy (kWh), and/or level of demand (kW) when applicable, over the 12 months prior to the date of granting the benefit, excluding application of taxes and other charges.

To participate, entities need to present the Regulatory Certificate issued by the Minas Gerais State Development Department (Sedese). In 2017 a total of 1,077 entities received this benefit, for a total of R\$ 7.8 million in deductions on electricity bills. The savings generated can be used for social welfare purposes. For the Company, the program also reduces power bill payment defaults, since only institutions with no arrears can receive the benefit.

In the Sponsorship Program, donations in favor of institutions are raised from consumers (‘sponsors’) by additions to their electricity bills – which are then 100% passed on to the bank account of the institution chosen. Sponsors who enroll in the program can choose which registered institutions to donate to and the amount to be debited on their bill. In 2017, the number of institutions registered rose to 387, of which 207 raised funds monthly, resulting in aggregate donations in the year of R\$ 60.83 million. Thus, using its electricity billing system, Cemig establishes a partnership with society (clients, who become sponsors of the institutions) to benefit the community, and as a consequence also improves its image as a company committed to the development of local communities. The institutions, for their part, receive secure donations making use of Cemig’s infrastructure and capillarity, without having any costs of their own on communication or printing of billing or payment slips.

## Cemig’s Corporate Volunteer Program

The AI6% (‘Creating Citizens’) Program is part of Cemig’s Corporate Volunteer Program: Employees register with the program, which coordinates donations to the institution. For a full description of its objectives and more information see [http://www.cemig.com.br/en-us/Company\\_and\\_Future/Sustainability/Programs/social/Pages/ai6.aspx](http://www.cemig.com.br/en-us/Company_and_Future/Sustainability/Programs/social/Pages/ai6.aspx)

Employee-sponsors aim to encourage their colleagues to specify that 6% of their income tax (otherwise due to the government) should be paid to the Children’s and Adolescents’ Funds (FIAs) of cities and municipalities. The FIAS then pass funds to institutions which:

- protect and defend the rights of vulnerable or at-risk children/adolescents;
- protect against violence;
- combat child labor;
- support culture, sport and leisure programs for children and adolescents;
- provide support for people with special needs;
- run hospitalization and chemical dependency programs;
- run programs of work training for adolescents; and
- orient and support families, and socio-educational activities.

A total of 1,758 Cemig employees participated in the 2017–18 campaign of the AI6% program, voluntarily allocating R\$ 1.12 million, to benefit approximately 25,000 children and adolescents in vulnerable situations, served by 184 institutions. Below is the history of the amounts allocated and the participation of Cemig's employees.

Year	Amount collected (R\$)	Percentage of employees who participated in the program
2013	1.306.000	25,1
2014	1.353.000	17,2
2015	1.207.000	22,7
2016	1.311.157	30,1
2017	1.126.058	29,8

Cemig also allocated part of its income tax payable to the same FIAs. The Company invested R\$ 916,000. In total, R\$ 2.04 million was allocated to entities in 95 municipalities in the Company’s operational area.

Approximately 35% of the institutions participating in the program support people with special needs, and 36% support families, as shown:

Type of institution	Number	%
Shelter	7	4%
Support for people with special needs	64	35%
Family support	66	36%
Training / learning for work / generation of income	6	3%
Foster home	5	3%
Day-care center	11	6%
Defense of rights	4	2%
Chemical addiction / Hospitalization programs	5	3%
Other (sport, culture, etc.)	16	9%
Total	184	100%



In 2017, Cemig held one more module of the Shared Knowledge Journey Program (JCC), in which 13 institutions that are part of the AI6% program took part. The JCC is a third sector initiative to provide technical education for professionals and volunteers to enable them to manage their institutions with a greater sense of entrepreneurial opportunity. The project offers six in-person training programs of three hours each, comprising a total program of 18 hours.

It began in 2015, through a partnership between a number of organizations – the Organizing Committee of the AI6% program (the Creating Citizens initiative), the Group of Volunteers from Cemig’s Social Responsibility Committee, UniverCemig, Cemig’s Energy Efficiency Management, and the Minas Gerais State Inter-Sector Alliances Center (CeMAIS) – and has so far trained people in a total of 63 institutions benefited by the AI6% campaign.

Cemig operates other voluntary initiatives, such as encouraging employees’ participation as volunteers in campaigns such as the National Food Collection Day, organized by Companhia das Obras do Brasil – which was created in Italy in 1986 and brought to Brazil in 1999, and celebration of ‘V-Day’ (Volunteers’ Day), always held on the last Sunday of August.

‘V-Day’ focuses, once a year, on mobilizing and fostering solidarity actions in a previously selected community, in partnership with various companies of the Cemig Group (Cemig Saúde, Cemig Telecom, Gasmig, Gremig, AIC, Indi, Axxiom and Forluz), to encourage employees in the practice of volunteering. Other participation includes: CeMAIS, a registered NGO which promotes inter-sector alliances for sustainable development and strengthening of the third sector; and more than 20 partners including professionals and companies that volunteer to give their time and service to make this event a reality.

The 2017 event was held to support the Pedra Viva Association, benefiting the communities of Pedreira Prado Lopes and Vila Senhor dos Passos, indicated by Belo Horizonte City Hall as one of the regions of the city with the lowest income level. 174 volunteers took part, providing residents with a series of free benefits, such as issuance of employment workbooks and identity cards, medical and ophthalmological care, orientation of oral health, a bazaar, a beauty parlor, professional orientation and entrepreneurship – as well as play and games for the children. It was estimated that about 1,000 people of the general public took part.



Another initiative by volunteers of the Company was Solidarity Christmas in the Meeting Hall, presented by employees of Cemig’s Power Trading management unit. The Salão de Encontro – the meeting hall referred to – is in Betim, and supports 755 underprivileged children; the employees donated toys that were presented to these children by Father Christmas.

Overall, in 2017 a total of 3,144 hours were dedicated to planning and organization of Cemig’s Volunteer Program, including technical visits and participation in courses and conferences by members of the Corporate Volunteer Group.

Cemig is a member of the following entities that promote corporate volunteering.

Brazilian Corporate Volunteering Council – **CBVE**: This is a network of companies, federations, institutions and business foundations that promotes and develops corporate volunteering. It aims to be a network for promoting and developing corporate volunteering both in Brazil and internationally, providing a space for dialogue and collective construction by its members.

Minas Gerais State Corporate Volunteering Committee - **CMVC**: This developed from several companies’ interest in creating a space to share experience in corporate volunteering. The member companies have the challenge of disseminating and enhancing the culture of corporate volunteering and corporate social responsibility, and helping these practices to become a tool for local and human development, aligned with the strategy of each organization.



## Fields of Light

This program was begun in 2005, and now includes approximately 900 amateur football fields. The new development in the current phase is inclusion of multi-sport courts in the project: the project aims to install electric lighting on 250 amateur football fields and 50 multi-sport courts, to provide improved quality of life and social empowerment to poorer communities by enabling them to practice sport, leisure and cultural activities, especially at night.

This also build’s Cemig’s image as a company committed to taking action in social responsibility. To participate in the Program, the local municipality’s city hall must be up-to-date in its payments to Cemig, and take over responsibility for managing the field or sports court, including security, maintenance of the facilities – and payment of the electricity bills.

The fields or courts that receive the illumination must be the property of the municipality, and must be within Cemig’s concession area.

The planned investment of R\$ 15 million is to be used for illumination, acquisition of materials and execution of works. Of the planned total of 300 fields/courts to be illuminated, 100 have been completed and 90 are in progress. A total of R\$ 6.16 million was invested in 2017.

A study of five illuminated fields was made in 2017 to measure the monetary benefit to the public of illumination of the pitches. One benefit measured was the increase in availability for practice of sport, and resulting increase in commercial activity in the surrounding area. A methodology devised for the study compared the cost of investment in the illumination of the pitches with the monetary value of the social benefit, and arrived at the conclusion that each R\$ 1.00 invested by Cemig saved a cost of R\$ 0.52 per year for the community.

## Social Initiatives



2017 was economically better than the two prior years, although it also had major challenges resulting from the financial crisis suffered by the country. To maintain the sponsorship projects, Cemig made partnerships with other companies of the group – Taesa, Light and Aliança Energia – thus maintaining the level of investment in projects in the state; it once again invested in Tax-incentive-bearing projects; and sponsored sport and cultural projects under the incentive laws of Minas Gerais state, increasing its participation in projects in these areas.

One highlight in 2017 was improvement of the process of approval and monitoring of projects, improving governance of this area, resulting in more effective projects and results.

## Health

Cemig took part in the Health Ministry’s Pronon Program, jointly with the Minas Gerais State Government Health Department, investing R\$ 837,000 in entities including the Mário Pena Association.

- **Local FIAs:** Cemig sponsored 22 municipal FIAs – Funds for Children’s and Adolescents’ Rights, throughout the State, benefiting thousands of children and adolescents.
- **The Fund for the Aged:** Following the damage caused to various institutions of the State by the rains of 2017, Cemig invested in the State Fund for Rights of the Elderly for it to allocate funds to the entities most in need.

The Company also allocated funds to the Belo Horizonte City Hall’s Fund for the Elderly, to benefit the CeMAIS 3i Network Management Project to Strengthen Old People’s Homes (ILPIs Teach).

## Sport

Another Cemig objective is to maintain commitment to support local environments where it operates through development of sports. For the community, sport programs mean building of social and citizenship links, especially for children and adolescents, and creating opportunities for them to become athletes. They also enhance Cemig’s image as a company committed to the development of healthy habits, and communities’ welfare and development.

In 2017, Cemig invested approximately R\$ 3.3 million in 28 projects throughout the state.



## Culture

Strengthening culture in Minas Gerais is also one of Cemig's corporate citizenship priorities. Promotion of culture benefits local society by enriching leisure opportunities, while preserving communities' memory and identity – and also Cemig's own history, as it has its own strong national and local cultural roots. It also strengthens Cemig's reputation with stakeholders, as a company that is a guardian of cultural heritage and stimulates artistic expression.

Cemig partners with the Minas Gerais State Culture Department in its cultural initiatives, a policy that ensures alignment with public policies – a strategic factor for assertively choosing projects it wants to sponsor and also for continuity of structuring actions in this field.

Cemig is concerned to take culture to the whole of Minas Gerais State, decentralizing actions from the state capital city.

Its cultural sponsorships in 2017 totaled 241 projects (incentive-bearing and otherwise), with investment of more than R\$ 34 million.

### The following are some of the cultural projects supported:

#### Inhotim

The Inhotim Institute, at Brumadinho, Minas Gerais, is open to the public, with about 30,000 visitors per month, and received one of Cemig's largest investments. It has a botanical garden and a contemporary art museum with numerous pavilions and galleries, with sculpture in the open air. Showing its concern with permanent cultural heritage, Cemig also supported 8 other museums, across the state.



#### The Public Art Center (CAP)

The Cemig Popular Art Center, part of the Praça de Liberdade Cultural Center in Belo Horizonte, exhibits the wealth of the culture of the people of Minas Gerais, through documentaries, photographs, paintings, weaving, ceramics and works in wood and metal – offering the visitor a privileged feeling of the various regions of the State, including even internal walls by graffiti artists, changed every six months. Overall the space reflects the versatility of the artists of Minas Gerais.





The Clóvis Salgado Foundation

This Foundation manages at least three art bodies: Cia de Dança Palácio das Artes; the Coral Lírico de Minas Gerais, and the Minas Gerais Symphony Orchestra – making possible a permanent programming of concerts and other artistic presentations either free of charge or at popularly accessible prices. Underlining its public vocation for fostering and stimulating citizenship, the Foundation invests in education and professionalization of artists through the Artistic and Technological Educational Center (CefArt), in the areas of music, theater, dance, visual arts and stage presentation technologies. These activities have strengthened the public character of the Institution, which increasingly seeks to be a space for all the population.

The Corpo Group

The Corpo Group is a contemporary dance institute with an international reputation, created in 1975 in Belo Horizonte, Minas Gerais. Cemig has been one of its partners for years. To date, it has conceived and presented 35 choreographed pieces and more than 2,200 recitals. It has 10 ballets in its repertoire, and gives an average of 70 performances per year.

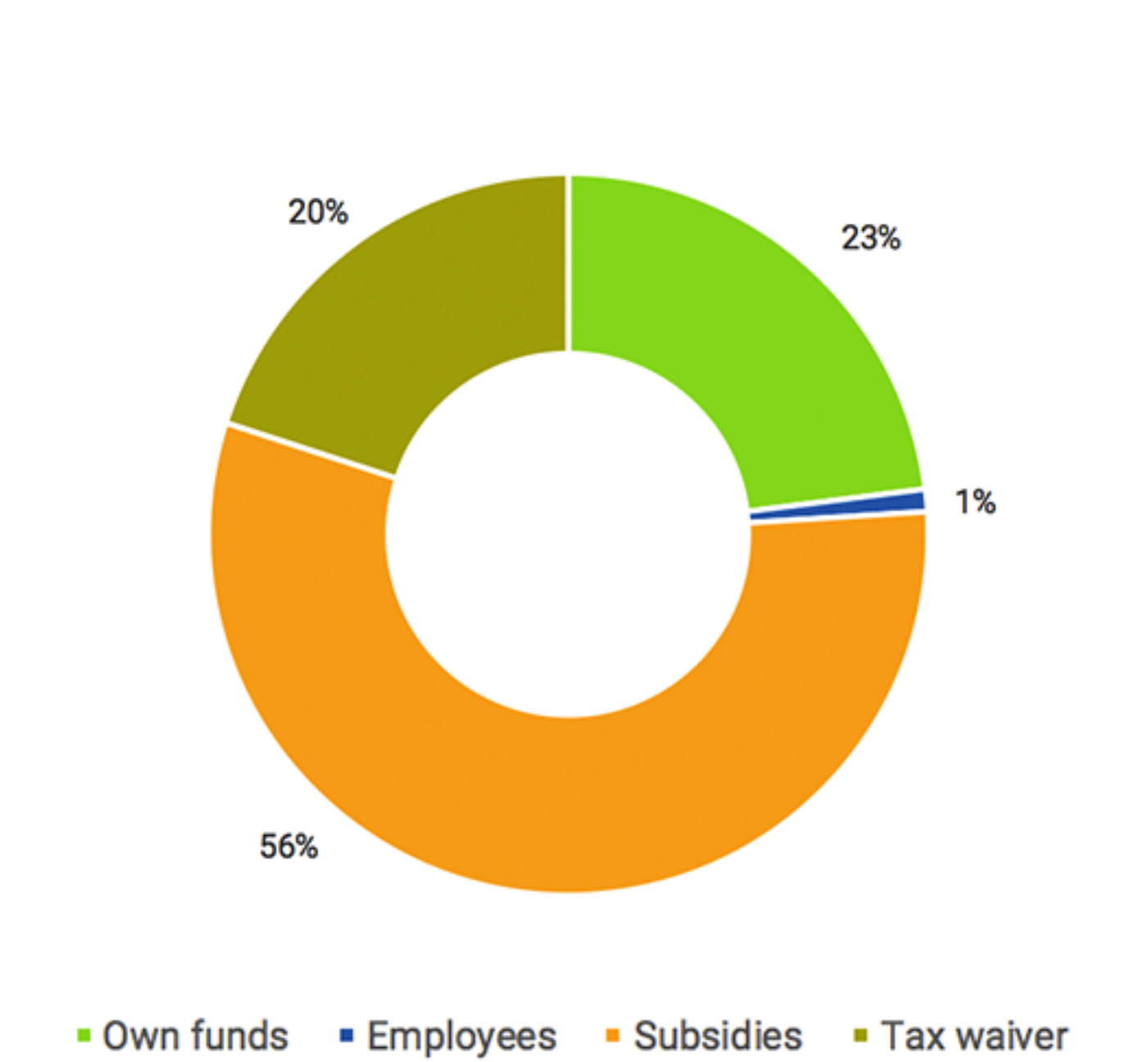
The Galpão Group

The Galpão Group, created in 1982, is one of Brazil’s most important theater companies, and originated in the tradition of popular street theater. It presents a theater that brings together rigor, research, and a quest for language with presentation of plays that have a great power of communication with the public. It is not defined by specific formulas or methods – and has always been guided by the concept of a theater group that not only puts on plays and shows but also aims to provide a permanent cultural reflection on the ethics of the actor, and of the theater, as part of the wider social and cultural universe.

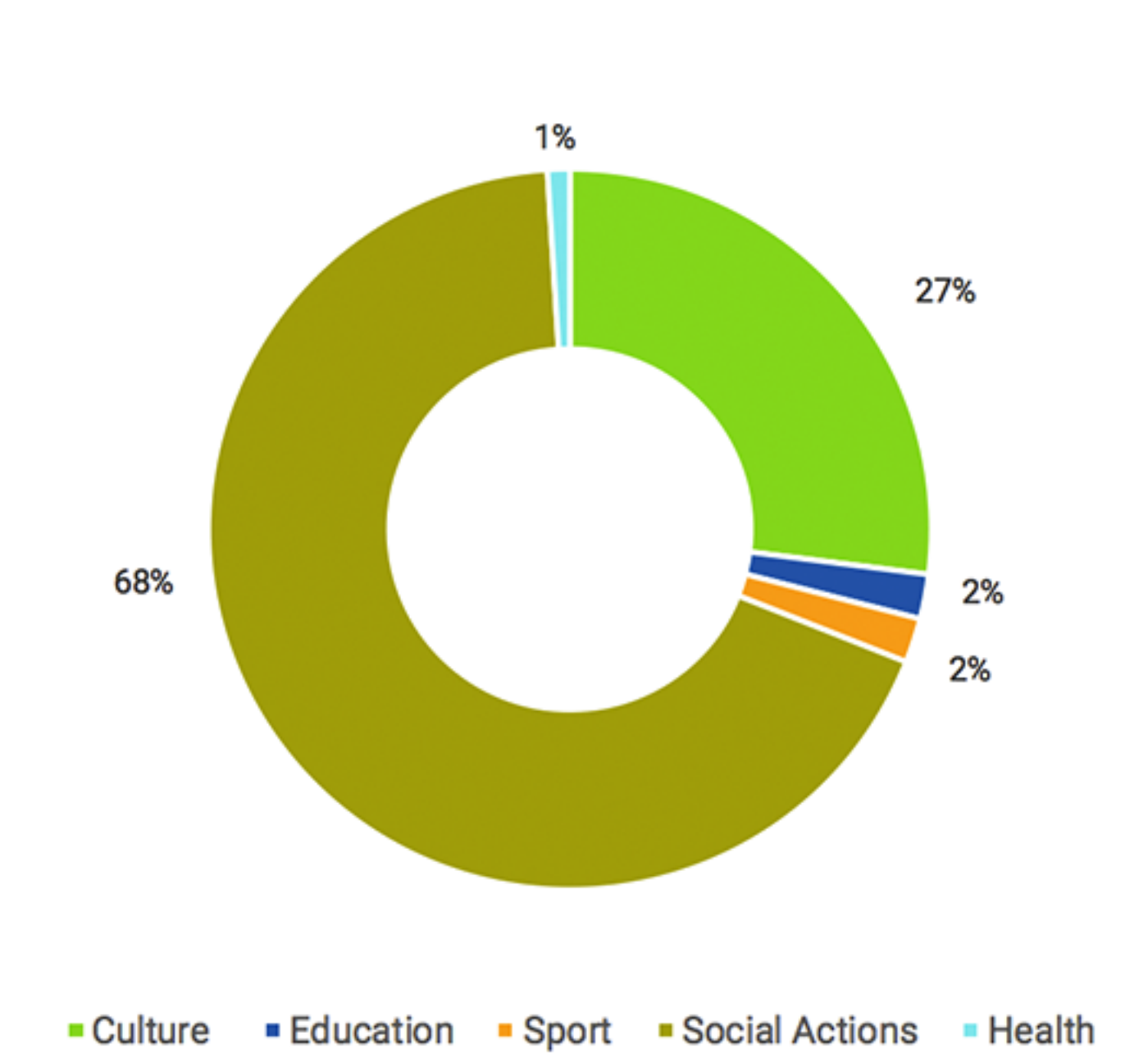
Details of Cemig’s social investments are in the table below. This shows a significant increase in the amounts invested in culture, the return on the investment via ICMS tax, and in Social Action, due to postponement of projects from 2016 to 2017, either due to cash restraints in Cemig’s distribution company, or delays in bid processes.

Area of investment	2017			2016		
	Own(R\$ Thousand)	Tax waiver(R\$ Thousand)	Total(R\$ Thousand)	Own(R\$ Thousand)	Tax waiver(R\$ Thousand)	Total(R\$ Thousand)
Culture	12,563	21,655	34,218	6,121	5,123	11,244
Education	1,176,335	973,370	2,149,705	2,299,520	1,070,020	3,369,540
Sport	1,538,637	1,774,341	3,312,978	752,445	469,577	1,222,022
Social Actions						
FIA, AI6% and donations	13,960,000	2,567,658	16,527,658	16,193,000	1,810,334	18,003,334
Subsidies	-	71,231,643	71,231,643	-	23,302,000	23,302,000
	13,960,000	73,799,301	87,759,301	16,193,000	25,112,334	41,305,334
Health	-	837,000	837,000	-	499,154	499,154
Total	29,237,971	99,039,380	128,277,350	25,365,883	32,274,418	57,640,300

Social Investments: Origins of Funding



Social Investments:







Fish Release Program at the Itutinga Environmental Station promotes the release of Piracanjuba pups.

# ENVIRONMENTAL RESPONSIBILITY

## ENVIRONMENTAL STRATEGY

Cemig’s environmental strategy seeks to balance the needs of development, environmental protection, preservation of biodiversity, rational use of natural resources, and compliance with environmental legislation – with those of the Company’s Mission and Vision as a business, and its Strategic Planning. Formulation of this strategy considers current and future risks and opportunities, challenges, medium and long-term scenarios, and the expectations of Cemig’s stakeholders. The process is oriented by Cemig’s [Environmental Biodiversity](#) and [Water Resources](#) Policies, by its Climate [Change Commitment](#), and also by internal procedures – which reflect the intention to align planning and strategic management with sustainable development. These all converge on creation of shared value where the Company operates, in compliance with the UN Sustainable Development Goals, principally Goal 7 (“Affordable and Clean Energy”), Goal 13 (“Climate Action”); and Goal 15 (“Life on Land”).

Cemig’s Socio-Environmental Adaptation Program is multiannual and takes a cross-sectional approach throughout the Company. It is the tool that details corporate strategy at a tactical level, in which the strategic guiding points are established. Through a prioritization matrix, operation of the strategy is driven based on definition of programs and initiatives with their respective responsibilities, actions, goals, objectives, indicators and allocation of resources – comprising topics such as: Biodiversity; Water; Waste; and Climate Change. The goals relative to these and other topics are shown under the chapter Strategy in this report.

Cemig considers the involvement of its many stakeholders through activities networks and the building of partnerships to help prepare and implement all programs to be of fundamental importance. It continues to invest in R&D and new technologies to mitigate impacts and reduce environmental risks – the results of this approach are reported over the following chapters. The chart below shows the environmental strategy, and its tactical and operational deployments.



The Socio-Environmental Adaptation Committee, made up of representatives of Cemig’s Chief Officers’ departments, periodically monitors implementation of the Socio-Environmental Adaptation Program for compliance with actions proposed.



# ENVIRONMENTAL MANAGEMENT

Cemig’s environmental management is based on its policies and directives, which are aligned with its Strategic Plan, and cover all of the operation and support processes from planning through construction, and operation up to final decommissioning of facilities.

The structuring of the Management Systems ensures that their basic premises are applied throughout the whole of the company’s workforce. Cemig’s Environmental Management System (SGA) enables adoption of best practices for minimizing environmental risk and optimizing operational costs. Acting preventively, it aims to minimize potential environmental impacts, reduce the number of adverse events, give employees appropriate preparation for dealing with emergencies, and achieve greater assertiveness in conduct of the environmental strategy and the commitments assumed with the bodies in authority. Through the adoption of Brazilian Standard NBR ISO 14001:2004, or its own Internal Management System – named SGA Level 1<sup>11</sup> – developed on the basis of NBR ISO 14001:2004 – the areas of the Company can conduct their activities in a controlled manner, and focus on compliance with the legal requirements that are applicable to environmental management. To ensure control, both Systems are verified by independent audits carried out by a certifying organization registered with and approved by Cgcre<sup>12</sup>.

Considering the need for adaptation of its processes to new versions of ISO 14001:2015 and ISO 9001:2015, Cemig has developed the project Transition for the ISO 2015 Standards, which as well as broadly restructuring the whole of the ISO and OHSAS system certifications, is expanding and consolidating the guidelines for quality management, through the vision of interdependent processes. The project Transition for the ISO 2015 Standards aims for better alignment between the Management Systems and their strategic guidelines, introducing to the Management Systems the need for greater commitment on the leadership, analysis of the context of the organization, alignment of the Management Systems with strategic planning, the mentality of risk in all stages of processes, consideration of stakeholders, management of changes, and organizational learning.

With the purpose of defining, as a corporate action, how the requirements of Standards are applicable to and met by Cemig, the documentation of the Company’s Management System has undergone an intense process of reflection and updating, at which time it was possible to involve the principal internal stakeholders and prepare a new Quality Manual, published by the Company as an Organizational Instruction, with its complementing documents, specifying the most important subject themes for the Systems, and orienting compliance with the requirements demanded by the Standards, through Cemig’s practices. Complementing this, online training has been prepared to provide a clear, objective and easily consumable presentation of the contents of the new corporate documentation, and teach all employees to meet the requirements of NBR ISO 9001:2015, NBR ISO 14001:2015 and OHSAS 18001:2007, thus increasing the engagement of all employees with the Management Systems and the certified processes of the organization.

<sup>11</sup> Note: Certification of the Environmental Management System under NBR ISO 14001 is only possible for areas that already have an environmental license; and since many of the facilities were built prior to the environmental legislation, they are currently in the process of corrective licensing with the environmental authorities. These facilities had good environmental management practices, but were impeded from obtaining certification. For this purpose, Cemig developed its SGA Level 1 as a step toward certification under ISO 14001. In practice, over time, as these facilities obtained their environmental operating license, they subsequently, at the first external audit, were recommended for certification under ISO 14001 – which indicates the rigor of the practices of SGA Level 1.

<sup>12</sup> Note: Cgcre, the General Accreditation Coordination of Inmetro, is the accreditation body for Compliance Assurance Entities recognized by the Brazilian Government. Thus, within the organization structure of Inmetro, CGCRE is the principal organizational unit that has total responsibility and authority over all aspects of accreditation, including accreditation decisions.

The table below shows the data for the coverage of Cemig’s Environmental Management System in 2017. This ensures 100% coverage of the electricity generated, transmitted and distributed to consumers:

Coverage of the Environmental Management System in Cemig			
Activity	ISO 14001	SGA Level 1	Minimum requirements <sub>4</sub>
Generation <sup>1</sup>	81%	18%	1%
Transmission <sup>2</sup>	72%	28%	0%
Distribution <sup>3</sup>	14%	10%	76%

<sup>1</sup> As % of total MW generated in the large plants

<sup>2</sup> As % of total length of Cemig GT's transmission Lines

<sup>3</sup> As % of all consumers

<sup>4</sup> The minimum requirements apply only where the SGA is not in place, either on the basis of 14001, nor on the basis of Level 1.



# ENVIRONMENTAL COMPLIANCE

EN29GC7GC8

As well as being a legal obligation, environmental licensing of Cemig’s activities aims to ensure that its operation and expansion take place in compliance with the environmental and sustainability criteria, and in harmony with the Company’s environmental policy.

Environmental licensing can have a preventive character (in the case of new facilities) or a corrective function (for facilities that are already built). For the environmental licensing of the facilities completed before 2007, Cemig D (Distribution) has grouped them by region, dividing the system into seven regional networks: Central, East, West, North, South, Mantiqueira and Triângulo Mineiro. At present, five of the seven regional networks already have licenses, while the Center and East Networks are in the process of analysis by the environmental authority. Cemig D now has 68.66% of its facilities duly licensed, and 31.34% in the process of licensing. Cemig has reached the target of 100% compliance with the period stipulated for obtaining the environmental licenses.

Cemig GT now has 77% of its facilities duly licensed, and 23% in the process of obtaining the related environmental licenses.

The risks related to the environmental licensing process are described in the Reference Form and in the 20-F Form.

In 2017, Cemig received eight advices of significant inspections and allegations of environmental infringements<sup>13</sup>, totaling R\$ 394 thousand. It is dealing with these demands, and has sent responses to the public and environmental bodies concerned. Note that these are the amounts claimed in these Infringement Notices – and they may change, or be annulled, depending on the results of the proceedings. There was no payment of fines in 2017, because the processes are still in course. Cemig was also the subject of two non-monetary orders: one for obstruction of a public right-of-way with tree pruning waste; and one suspending works on the BH Center Substation, issued by Supram CM (environmental agency of Minas Gerais State), for unauthorized intervention in a watercourse.

<sup>13</sup> Note: An environmental infringement notice is considered to be significant if the proposed fine is more than US\$10,000. (Definition suggested by the Dow Jones Sustainability Index – 2017).

# FUNDS INVESTED IN THE ENVIRONMENT

EN31

In 2017, Cemig invested approximately R\$ 37.5 million for environment purposes. Funds allocated for management of waste totaled R\$ 854.3 thousand. Expenditure on R&D projects was R\$ 1.1 million; and the remaining R\$ 35.5 million was allocated to investments and expenses on compliance with environmental restrictions, and improvements. As mentioned in the Environmental Strategy section, the Socio-Environmental Adaptation Committee periodically reviews the prioritization and allocation of these resources. Environmental investments were subdivided into capital investments, expenses and R&D projects as follows:

Funds invested in the environment (R\$)					
	2013	2014	2015	2016	2017
Capital expenditure	6,579,000	3,872,000	6,819,664	8,177,000	4,048,000
Total expenses	35,779,958	37,219,780	38,527,936	41,628,515	32,286,421
R&D	10,017,000	11,746,000	8,492,661	2,856,000	1,138,257

# MATERIALS

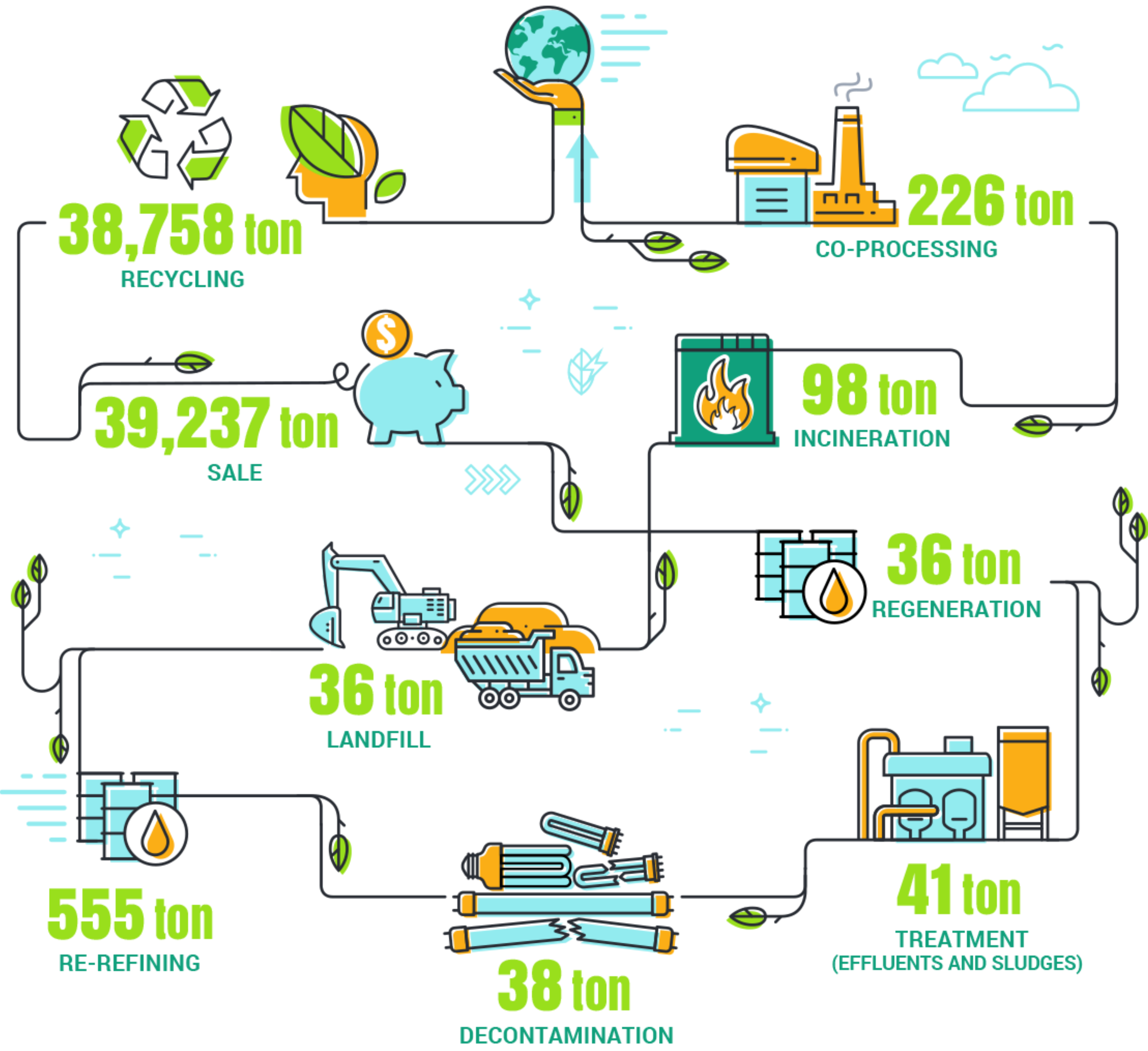
EN1

Materials from non-renewable sources, and those with greater intensity of use and operational significance, consumed by Cemig, and the respective quantities consumed, are described in the table below. Consumption of materials for public illumination was lower, due to a change in the federal legislation which attributed responsibility for expansion and maintenance of public lighting to local prefectures. There was a reduction in consumption of concrete poles, with a significant increase in wooden poles, used in the rural areas – reflecting the Universalization project agreed with Aneel for expansion of rural electrification. This project aims to make new connections to 30,000 consumers whose orders are now late, with a projection of a further 10,000 consumers added by the process of natural growth.

Year	Distribution transformers (units)	Concrete poles (units)	Cables (m)	Cables (kg)	Meters (Units)	Public lighting (lamps, relays, reactors, lamp housings, arms, plugs,igniters, etc.) (units)
2013	14,209	52,243	10,795,817	2,684,791	843,185	734,429
2014	11,938	38,598	8,901,101	1,453,548	480,704	698,406
2015	16,237	39,530	8,927,891	1,316,413	555,390	42,107
2016	19,688	47,163	8,560,534	1,000,324	529,088	70,652
2017	28,116	42,057	7,853,443	1,155,093	545,560	49,986

# WASTE

EN2EN23EN24SDG12





Reverse logistics and final disposal of waste are the responsibility of an area that has been certified by Level 1 of the Environmental Management System (SGA Level 1), which receives waste that has been duly identified, separated and packed by the areas that generated it. To provide a high degree of traceability, and availability of the data on generation and disposal of waste, in 2017 a waste control system was put in place via SAP-R3<sup>14</sup>.

In 2017, approximately 39,800 tons of industrial waste was disposed of in an environmentally appropriate manner: 98.6% was sold or recycled, 0.4% was regenerated, reused or decontaminated; and 1% co-processed, incinerated, sent to treatment (effluents and sludges) or sent to industrial landfill.

The sold waste consists mainly of cables and wires, transformer scrap, scrap metal, scrapped meters, poles, crossheads, and wood shavings and residue. The sale of 39,200 tons of waste generated R\$ 10.7 million, a reduction of approximately 4% over the previous year’s revenues.

In 2017, R\$ 2.6 million was spent on the disposal of 475.9 tons of solid waste with oil and solvents, PPEs<sup>15</sup>, glass wool and fiberglass wastes, septic tank sludge, residues of asbestos and waste contaminated with PCBs<sup>16</sup>, and insulating mineral oil. This was 43.8% less than in the previous year, mainly due to the lower generation of residues of asbestos and wastes contaminated with PCBs, and insulating mineral oil. In 2017, a total of 89.6 tons of contaminated wastes and equipment containing PCBs was disposed of. These materials were sent for thermal destruction to a company licensed to carry out this service.

The waste disposed of in 2017 was not necessarily generated in the year. This was due to temporary storage in which the waste is characterized, separated, packed and identified before being allocated for disposal.

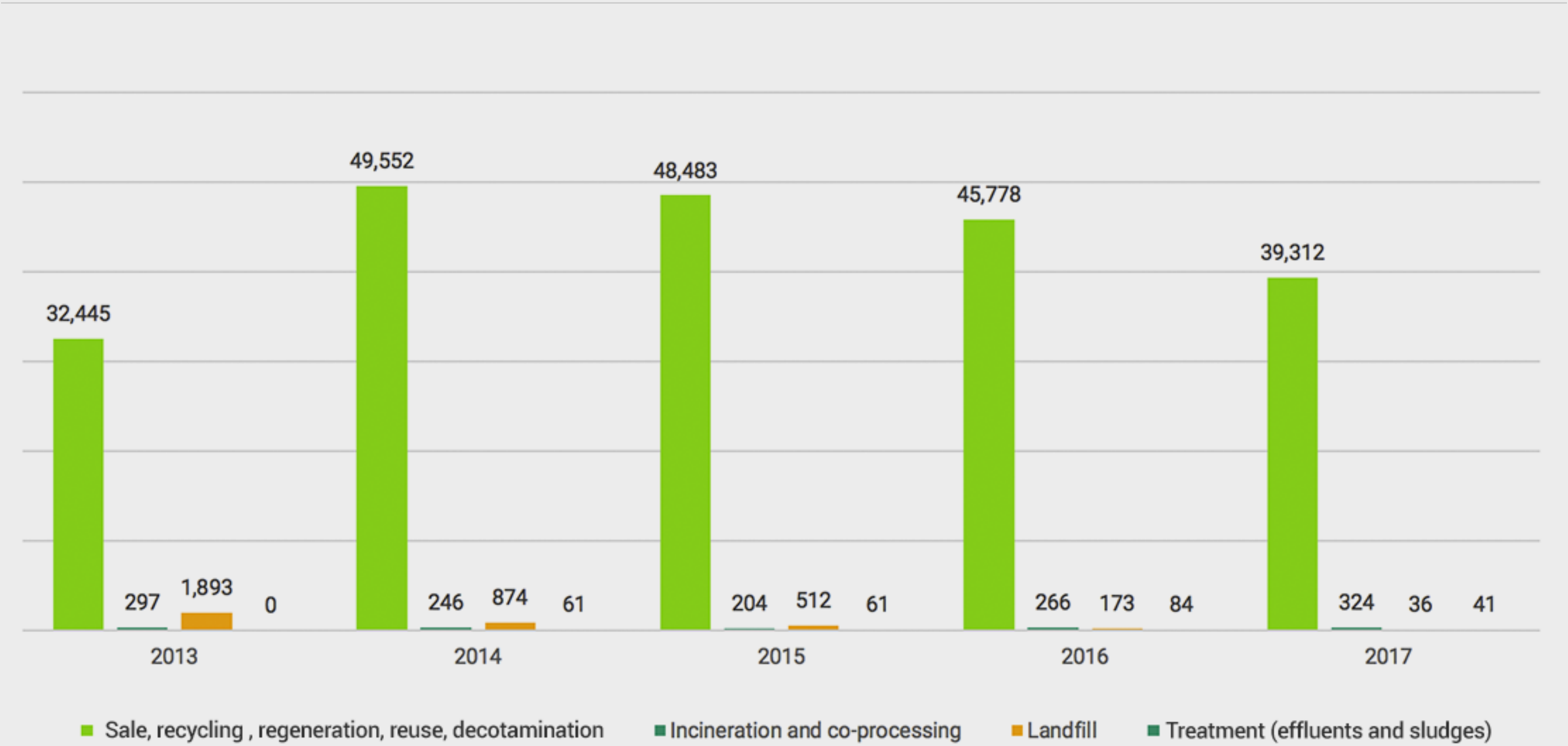
Of the total of oil wastes disposed of, 36.1 tons of insulating mineral oil were regenerated and reused by the Company. This is a reduction of approximately 89% from the total for 2016. This measure, as well as offering environmental benefits such as non-generation of hazardous waste, enabled Cemig to save some R\$ 200,000 in the cost of acquisition of new oil alone, without taking into account waste disposal costs.

<sup>14</sup> Integrated transactional corporate management system.

The total generation of wastes impregnated with oil was reduced in 100%, from the previous year, due to greater control in equipment maintenance services, and this directly contributed to reduction of final disposal costs by R\$ 39,800.

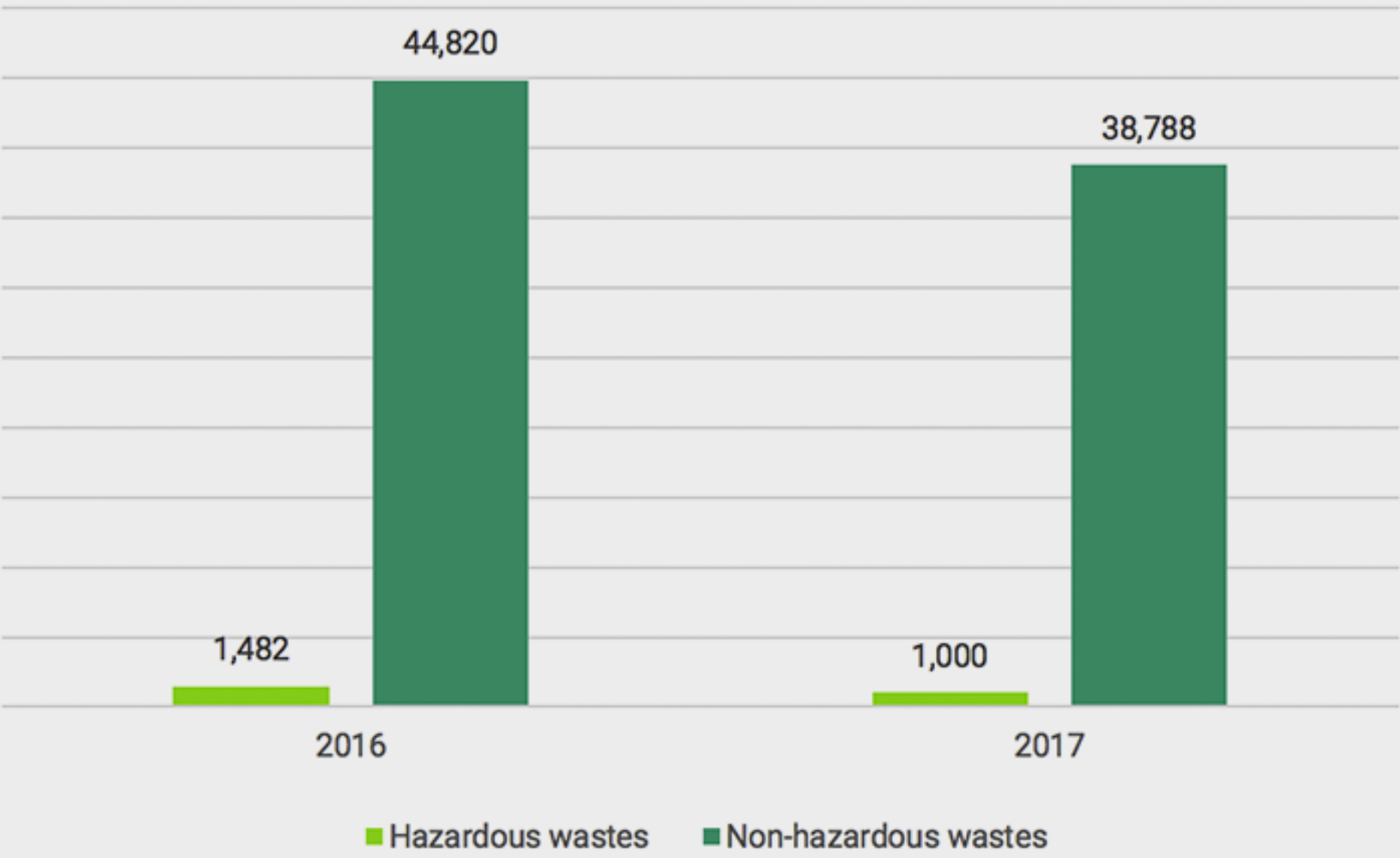
The total spillage of oil, whether in water or on the ground, measured in 2017 by Cemig GT (Generation and Transmission), was 7,335 liters.

### Final disposal of wastes (t)



The amounts referring to the waste destined between the years 2013 and 2016 were recalculated to include the waste generated and destined directly by the Igarapé TPP. The 2017 figures already include all the waste from the Igarapé TPP.

Hazardous and non-hazardous wastes (t)



To adapt to compliance with the environmental and work safety regulations, Cemig has its technical specification TE-02.118-Cemig-760 – which sets minimum requirements, when applicable, for manufacture, handling, warehousing, transport, packaging and final disposal of the materials acquired by Cemig, as well as information on compliance with the legal requirements and those of the contracted services when using the materials and generating wastes.

<sup>15</sup> PPE = Personal Protective Equipment (e.g. safety glasses, helmets, gloves and others).  
<sup>16</sup> PCBs = Polychlorinated Biphenyls. Mixtures of up to 209 chlorinated compounds, which vary in name according to the relative position of the chlorine atoms in the structure. In the electric sector the most known PCB is Ascarel (commercial name) used as dielectric fluid in transformers.

ENERGY CONSUMPTION

EN3	EN6	EN30	EU1	EU2	GC8
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Cemig’s energy consumption, by type:

Total energy consumption (gigajoules – GJ)								
Year	Electricity	Change from prior period %	Fuels for fleet, emergency generators, equipment and machinery *	Change from prior period %	Fuels for thermal generation plants**	Change from prior period %	TOTAL	Change from prior period %
2013	157,487	-1.17	176,615	-3.57	1,923,927	+252.37	2,258,029	+154.15
2014	158,993	+0.96	173,807	-1.59	8,054,794	+318.66	8,387,593	+271.46
2015	160,042	+0.66	164,894	-5.13	1,965,111	-75.60	2,290,047	-72.70
2016	156,373	-2.29	162,030	-1.74	1,709	-99.91	320,111	-86.02
2017	156,773	+0.26	155,146	-4.25	450,154	+26,240.03	762,074	+138.07

\* The fuel consumption figures for the years 2013, 2014 and 2015 were rectified during the GHG Inventory Audit.  
\*\* The amount of residual oil consumption at Igarape Thermal Plant in 2014 was rectified during GHG Inventory Audit.



The method used for calculation of some of the components of this table is based on the Greenhouse Gas Protocol tool, which is audited by an independent body within the scope of Cemig’s GHG inventory. There was an increase of 138.07% in total consumption of energy in relation to 2016, mainly due to the dispatching of the Igarapé thermal plant for generation of electricity in 2017. Even with the increase of 0.26% in electricity consumption, from 2016, Cemig continued to meet the target set for reduction of consumption, reducing it by 7.1% in relation to 2011 (the base year for the target).

For more information about the Cemig Objectives and Goals, please click [here](#).

The fuel consumption of Cemig’s vehicle fleet was reduced by 4% from 2016 to 2017, a saving of approximately R\$ 5.2 million. This represents a reduction, comparing 2012 and 2017, of approximately 15% in Cemig’s annual consumption, equal to a reduction of more than half a million liters. This reduction is due to modernization of the vehicle fleet under the “Fleet Replacement Program” implemented in 2016 and 2017, and constant optimization of the fleet. This optimization in this period was possible mainly due to the fleet now in operation having an electronic management system, which enables constant evaluation of the use of the vehicles. The total number of vehicles was reduced by 644 from 2012 to 2017. Further, the Company adopted S10 diesel as the principal fuel used in the fleet, rather than standard diesel (S500), used previously. All the pickup trucks (both owned and leased) that used standard diesel were replaced by pickup trucks using S10 diesel. A total of 1,112 pickup trucks in this condition came into operation. Cemig now has 1,115 vehicles running on S10 diesel.

This table gives Cemig’s various electricity generation sources, by installed capacity and net total generation. Note that approximately 100% of the energy generated comes from sources that do not emit greenhouse gases.

Cemig's generating park								
Source	Installed capacity (MW)				Net generation – MWh			
	2016	%	2017	%	2016	%	2017	%
Hydroelectric	7,668	97.53	7,012	97.48	23,172,051	99.54	19,592,950	99.30
Thermal – fuel oil	131	1.67	131	1.82	-	-	38,650	0.20
Thermal – process gases	13	0.16	-	-	4,879	0.02	-	-
Wind	49	0.62	49	0.68	101,470	0.44	98,380	0.50
Solar power	1	0.02	1	0.02	1,718	0.01	1,652	0.01
Total	7,862	100	7,193	100	23,280,118	100	19,731,632	100

Note: Renova wind farms, in which Cemig stake is equal to 34.15%, were not considered.

In 2017 Cemig reports no generation from the Barreiro thermal plant since the Company’s contract with Vallourec to operate the plant ended in December 2016. However, total generation by thermal plants increased in 2017, due to dispatching of the Igarapé thermal plant for short periods of time, and also due to environmental restraints (low volume of the Paraopeba River), which caused operation outside the best ranges of efficiency. The lower installed capacity reflects Cemig’s loss of the concession for the Volta Grande, Jaguará, Miranda and São Simão plants in 2017. Of these four plants, only São Simão continues to be operated by Cemig until May 2018.





Daniel Bahia Vieira, plant operator, Geraldo Henrique, maintenance electrician, Odilon Ferreira da Silva, maintenance mechanic and Yuri de Jesus Veloso, mechanic technician at the Cajuru Hydroelectric Power Plant, Divinópolis-MG, Brazil.

# WATER RESOURCES

DMA

EN9

EN26

SDG6

Water is the principal raw material for production of electricity by Cemig – it is employed (not used up) to turn the generation turbines, and is 100% returned to its watercourse. It is a resource that is sensitive to climate variations; vulnerable to the consequences of exploitation of other natural resources; heavily impacted by the action of mankind; and in Brazil, subject to a regulatory environment. As a result, the subjects of water management and conservation are of extreme importance to Cemig.

Underlining the Company’s commitment on the subject, in 2016 Cemig published its [Water Resources Policy](#).

The body that decides when to activate (dispatch) hydroelectric or thermoelectric generation plants linked to Brazilian National Grid (Sistema Interligado Nacional, or SIN) is the National System Operator (Operador Nacional do Sistema Elétrico, or ONS). The ONS is a legal entity under private law, in the form of a civil association, not for profit, responsible for the coordination and control of the operation of the electricity generation and transmission facilities of the Brazilian National Grid, under the inspection and regulation of the Brazilian Electricity Regulatory Agency (Agência Nacional de Energia Elétrica, or Aneel).

The operation of the reservoirs that Cemig uses for generation of hydroelectric power involves, essentially, consideration of the multiple uses of the water by other users of each river basin, and this in turn leads to the need to consider a series of restraints in relation to: the environment; safety; irrigation systems; human supply; waterways; bridges; and other considerations – Cemig rigorously obeys and respects all of these. In periods of severe drought, like the present period from 2013 through 2017, monitoring and forecasting of the reservoirs levels and a constant dialogue with public authorities, civil society and users have been of primordial importance for ensuring generation of power, as well as for the other uses of this resource.

## Irapé – a new challenge for Cemig in ensuring the multiple uses of water

In the years 2014–2016, management of the storage of the reservoir of the Três Marias hydroelectric plant has been the subject of comment in this annual report. In this year’s report, we turn attention to Cemig’s actions in relation to the reservoir of the Irapé hydroelectric plant, in the basin of the Jequitinhonha River. As happened previously with the Três Marias plant, flows into the reservoir of the Irapé plant since 2013 have been well below previous average levels. In the first half of 2017, Cemig made various tests on the reservoir – testing various new operating ranges for the generating units; testing the use of lower, and even zero, downstream flow; studies for future simulations of storage levels in the reservoir; and studies on levels at the various points downstream that also need to employ the flow.

These studies showed the need for a change in the operational policy of the plant – which would require reduction of generation to avoid exhausting the reservoir over the year 2017. This policy of restricted flow and restricted generation was put in place at the end of the first half of the year, and indeed reduced even the minimum outflow. The other users of the Jequitinhonha River, downstream, were not affected, or were able to make the minimum necessary adjustment to the new flow condition. This was an example of a solution for optimum service to all those making use of the flow of the river.

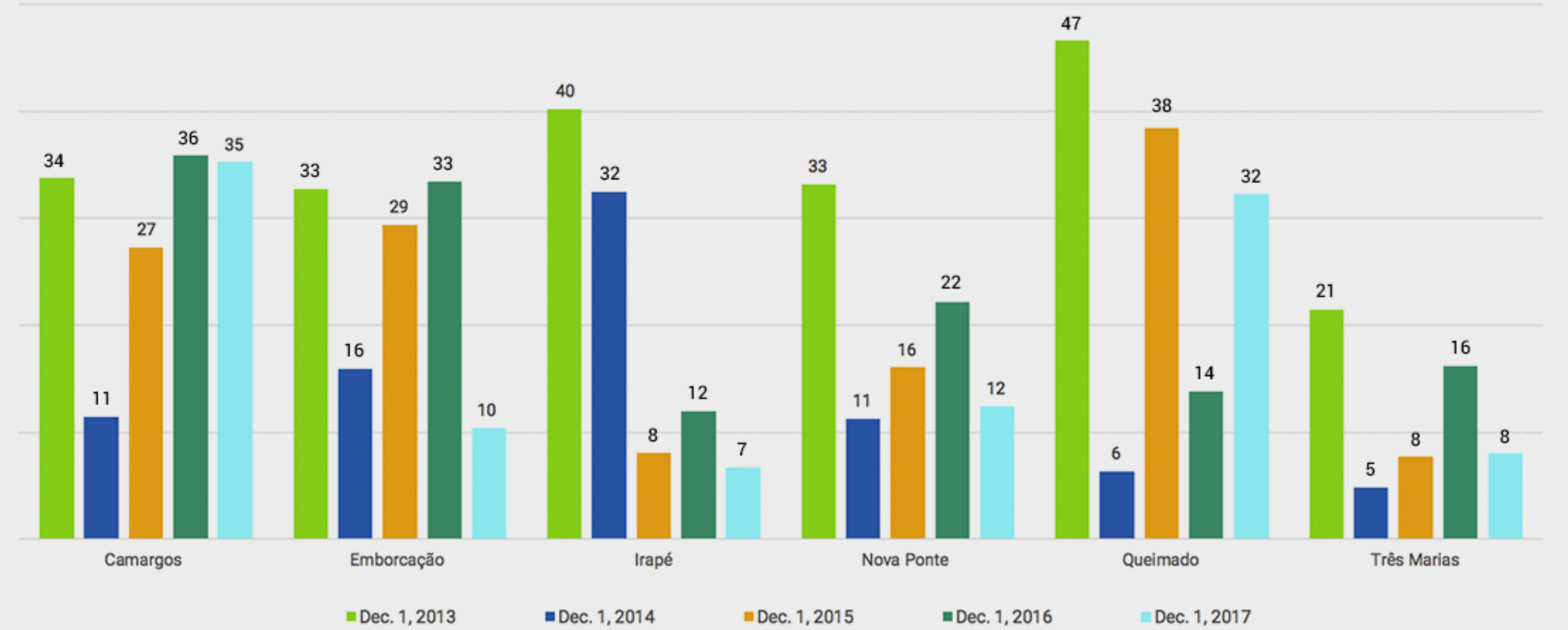
The dialogue with civil society, other users and the public authorities of the regions downstream was carried out through Cemig’s Proximidade (Proximity) Program, and was held in the town of Coronel Murta in June 2017, with around 86 people participating. The National Waters Agency (Agência Nacional de Águas, or ANA) was also previously informed of all the studies and actions implemented in management of the reservoir and the Jequitinhonha River.



The previous forecast had been that the level of the reservoir would drop to around 5% of its normal usable volume. Adopting this new operational policy succeeded in preventing the Irapé reservoir from reaching these levels - i.e. very close to completely empty. The lowest level in practice was 6.5%, on November 30, 2017.

The chart below shows levels of Cemig’s principal storage reservoirs on December 1, 2017, compared with the same date in previous years.

Usable volume by plant volume as % of total



Cemig makes daily figures on the levels of several of its reservoirs available on its [website](#).

Although it does not consume water in hydroelectric generation, Cemig is still a major employer of the resource – and as a result it participates actively in many decision committees, associations, forums and similar organizations that deal with water resources in its area of operations, accompanying issues, and proposing the most appropriate decisions possible for the Brazilian industry, in the effort to reconcile multiple uses of river basins. Examples of these forums are the National and State Water Resources Councils, the River Basin Committees of each of the river basins, Industry Technical Chambers, and various workgroups. For its work in Minas Gerais, Cemig is a member of 20 State-level River Basin Committees, and five Federal Committees. It is also a member of the Brazilian Large Generating Companies Association (Associação Brasileira das Empresas Geradoras de Energia Elétrica, or Abrage), and in 2017 was the coordinator of Abrage’s Water Resources Work Group (GTRH). There are more details on Cemig’s participation in numerous institutions, at [this link](#).

Cemig has indicators for management of water resources, which it monitors for trends of compliance with targets. These make occasional interventions necessary. One highlight is the Plant Energy Planning Efficiency Index (Índice de Eficiência no Planejamento Energético das Usinas, or IEPE) – a measure of the efficiency of operation management of Cemig’s hydroelectric plants: it compares actual generation to optimal generation, taking into account actual flows, maintenance of the generating units, and compliance with operational restraints. This indicator fits into the corporate map of the Generation business under the strategic objective "Increase operational efficiency". The higher its value, the better has been the planning of water use for energy generation. As in 2016, in 2017 there was almost no flow out of the plants because of the low inflows, and in these circumstances the IEPE index beat its target of 92.5%, reaching 93,93%.

Concessions for use of water resources for generation need to be operated in balance with other uses, and are thus always linked to technical studies based on regulation of flow, and characteristics of the reservoir and the dam. Cemig manages its use of water resources in a total of 145 of these situations, concurrently. These cover the whole range its activities: some are insignificantly small cases of registration of water use – 28 fall into this category – but 121 are directly related to concession grants.

For a map of all the places where Cemig has water use concession grants – spread over its concession area, which is the same size as France - see this [link](#).

ANALYSIS OF RISKS

Cemig uses the output of its Risk Management System to analyze scenarios and decide on its degree of financial exposure, to support its strategic decisions, and to establish preventive and control measures. Currently, risks mapped by the system include: silting or rupture of reservoirs; deviations from meteorological forecasts; reductions of physical guarantee for small hydroelectric plants, due to lower water availability; changes in regulations and the price structure; and conflicts with stakeholders, possibly due to prolonged droughts, or floods/excess rain.

For more details, please access:

- [20-F Form](#); submitted to SEC of the US
- [CDP 2017 Climate Change Report](#)
- [CDP 2017 Water Report](#)

# Dam safety

EU21

The process that aims to ensure safety of the dams operated and maintained by Cemig uses, in all its phases, a methodology founded on the best Brazilian and international practices, also complying with Brazilian Federal Law 12.334/2010, which established the National Dam Safety Policy and its associated regulations (Normative Resolution 696/2015 of Aneel, the Brazilian Electricity Regulatory Agency). The process includes: field inspection; collection and analysis of instrument data; creation and updating of dam safety plans; planning and monitoring of maintenance services; analysis of results and classification of built structures. Frequency of safety inspections and the monitoring routine are established on the basis of classification of structures.

The vulnerability of each dam is calculated automatically, and continuously, and monitored by the Specialist Dam Safety System (the ‘Inspetor’ System). The software was originally developed as an R&D project, including tools for georeferencing of anomalies and enabling a global analysis of the behavior of each dam, and also systemic analysis of the portfolio. The Inspetor System undergoes an upgrade nowadays, in line with the evolution of technology and any new regulatory requirements, and also incorporates risk management concepts.

Periodic reviews of dam safety involve not only Cemig’s professionals but sometimes also a multidisciplinary team of external consultants. On these occasions extremely experienced professionals carefully check all the issues related to safety of the dams with state-of-the-art instruments and concepts.

Cemig was the Brazilian pioneer in preparation of emergency plans for dam rupture – it began studies on the subject in 2003. Specific emergency plans are now in place for each dam, covering:

- Identification and analysis of possible emergency situations.
- Procedures to identify any malfunction or potential rupture conditions.
- Procedures for notification.
- Preventive and corrective procedures to be adopted in emergency situations.
- Responsibilities.
- Dissemination, training and updating.

Internal training on these Emergency Action Plans (Planos de Ação de Emergência, or PAEs) is held periodically, both on theoretical aspects and discussion, or in operations. Discussion can include seminars, workshops, tabletop exercises or games. Operational activities may include drills or simulations. The purpose of these training courses is to evaluate PAEs, and propose improvements, especially in relation to (i) flows of communication and (ii) decision making process.

In 2017, Cemig focused on creating a closer relationship with external public that might be involved in emergency situations. Under Normative Resolution 696/2015, the Emergency Action Plan is required to contain the strategy and means of disclosure and alert for communities potentially affected in an emergency situation. The Plan is thus divided into two parts, for the internal and for the external publics:

- **Internal PAE:** This includes all the procedures for detection, prevention and correction to be adopted in emergency situations, enabling the technical staff to take the best decisions as fast as possible.
- **External PAE:** This sets out the interfaces between the Company and the external public during any emergency situations that are detected.



Normative Resolution 696/2015 makes clear that the PAE must be available at the facility, and in all the prefectures involved, and also submitted to the competent authorities and civil defense organizations. Cemig’s PAE thus includes presentation of the risk of flooding that might be caused by ordinary floods, or by a dam rupture. The document’s focus is to build a culture of readiness for flood situations for the communities living along the rivers where Cemig’s plants are located. In 2017, eight external plans were delivered to a total of 13 municipalities. Over the years 2018 and 2019 a further 92 municipalities will be involved in this phase of officialization of the communication process in emergencies.

To improve the perception of risk and enable the Contingency Plans for each municipality to be developed with the best technical content, in October 2017 Cemig issued a tender to contract a wide range of services – including topography; geodesy; bathymetry; geoprocessing; and acquisition of aerial research products by officially standardized aircraft – for preparation of a cartographic base of the valleys downstream from 42 hydroelectric plants. These are to be used in computer models of water propagation for eight flow scenarios, to support the preparation of the Emergency Action Plans to cover dam ruptures and natural floods. This project will take place over three years. It will produce:

- Construction of the cartographic base.
- Estimated hydrograph for a rupture.
- Simulation of propagation of flows for ordinary floods and for rupture.
- Preparation of thematic maps.
- Preliminary study of a system for mass notification and estimate of the population affected.

The great gain from this approach adopted by Cemig is the presentation of the impacts expected to be caused by natural floods. This gives increased safety to people living on the banks of rivers, developing resilience of cities to flood events.

As a second phase of the work on preparations for emergency situations, the products will be formally delivered to each municipality with workshop-format meetings for their civil defense centers, with presentations and exchanges of experience. The Proximidade Program, Cemig’s main program for relationship with communities around its reservoirs, will now adopt implementation of the Emergency Action Plan for each plant, including meetings with the Civil Defense and Protection Coordinations (Coordenadorias Municipais de Proteção e Defesa Civil, or Compdecs) in the municipalities downstream from Cemig dams. The Plan will be presented to affected populations with indication of the action to be taken by Cemig in an emergency. This will enable each municipality to prepare a Civil Defense and Protection Contingency Plan, in preparation for natural flood situations, or flooding resulting from a dam rupture.

Over the coming years, Cemig’s dissemination of the external PAEs will involve a total of 42 generation plants – small and large – in approximately 100 towns and cities affected in Minas Gerais, Rio de Janeiro, Espírito Santo and Santa Catarina. It is planned to hold approximately 41 meetings in 2018 and 2019 involving approximately 500 agents of the related local Compdecs.

## HYDRO-METEOROLOGICAL MONITORING

Cemig maintains precise management of possible impacts on its business relating to availability of water. Preventatively, it invests in practices to position it with maximum safety in a range of possible scenarios, using modern techniques and equipment, such as its Storm Location System, Hydro-meteorological Monitoring and Telemetry System, mathematical models for hydrological simulation, and weather and climate forecasting.

At present Cemig operates a hydro-meteorological network monitoring 372 data series: 178 of these measure rains; 104 measure flows in water courses; 53 measure levels in reservoirs and rivers; and 37 are climate stations monitoring temperature, air humidity, wind speed, wind direction, solar radiation and atmospheric pressure. These stations are spread out in strategic locations in the states of Minas Gerais, Goiás, Rio de Janeiro, Espírito Santo and Santa Catarina. Their data are received in real time at Cemig’s headquarters in Belo Horizonte.

The main instrument for increasing the assertiveness of hydrological forecasts is the Meteorological Radar System acquired by Cemig in 2011. This provides enhanced security for the operation of hydroelectric facilities, and the general public. The Radar is also strategic for control and operation of the reservoirs of the hydroelectric plants. Equipped with early information on the direction of movement and intensity of rains, it is possible to estimate the quantity of water that will reach the reservoir and adjust hydroelectric operations to minimize the effect of floods for the population and for the facility. Also, Cemig can issue alerts to civil defense entities, on storms that might have serious consequences for the population, enabling preventive action.[Click here](#) for more details.

## MONITORING OF WATER QUALITY

The water quality in Cemig’s reservoirs is regularly monitored in a network comprising the principal river basins of Minas Gerais State, in 42 reservoirs and more than 180 stations collecting physical, chemical and biological data. The monitoring network has been adjusted to enhance support in management of water quality in the reservoirs, and comply with environmental licensing restrictions, state and federal resolutions. Reaching these objectives is a gradual process, and the continuity and standardization of monitoring has provided effective interaction between management bodies and users, with a view to achieving full sustainable management of water resources.

Collections for monitoring of water quality provide a large volume of information, which is analyzed and stored, building an extensive database (Siságua), enabling analysis of temporal and spatial evolution of the reservoirs and their surroundings. Enhancement of the Siságua system results in improved structuring of management, generating fast, precise and, especially, useful information. Information systems are now assuming a strategic role in organizations, in Cemig’s case helping to make management more efficient.

To provide concise and objective information to authorities and the public on the influence that development-related activities have on the environmental dynamics of aquatic ecosystems, within its monitoring of water quality Cemig uses, and publishes, the Water Quality Index, or WQI (in Brazil, IQA – Índice de Qualidade das Águas)<sup>17</sup>, which is the result of data on nine specific parameters. This index shows the degree of contamination of river water by organic material, nutrients and solids, which are normally indicators of pollution associated with domestic waste.

The table below shows the results for average WQI, in 2017, at some of Cemig’s plants in various river basins:

Plant	River	WQI - Water Quality Index		Quality level	Color	Range
Cajuru	Pará	81.75		Excellent		90 < WQI ≤ 100
Jaguara	Grande	85.50		Good		70 < WQI ≤ 90
Machado Mineiro	Pardo	63.00		Average		50 < WQI ≤ 70
Irapé	Jequitinhonha	84.80		Bad		25 < WQI ≤ 50
Três Marias	São Francisco	78.80		Very bad		0 < WQI ≤ 25

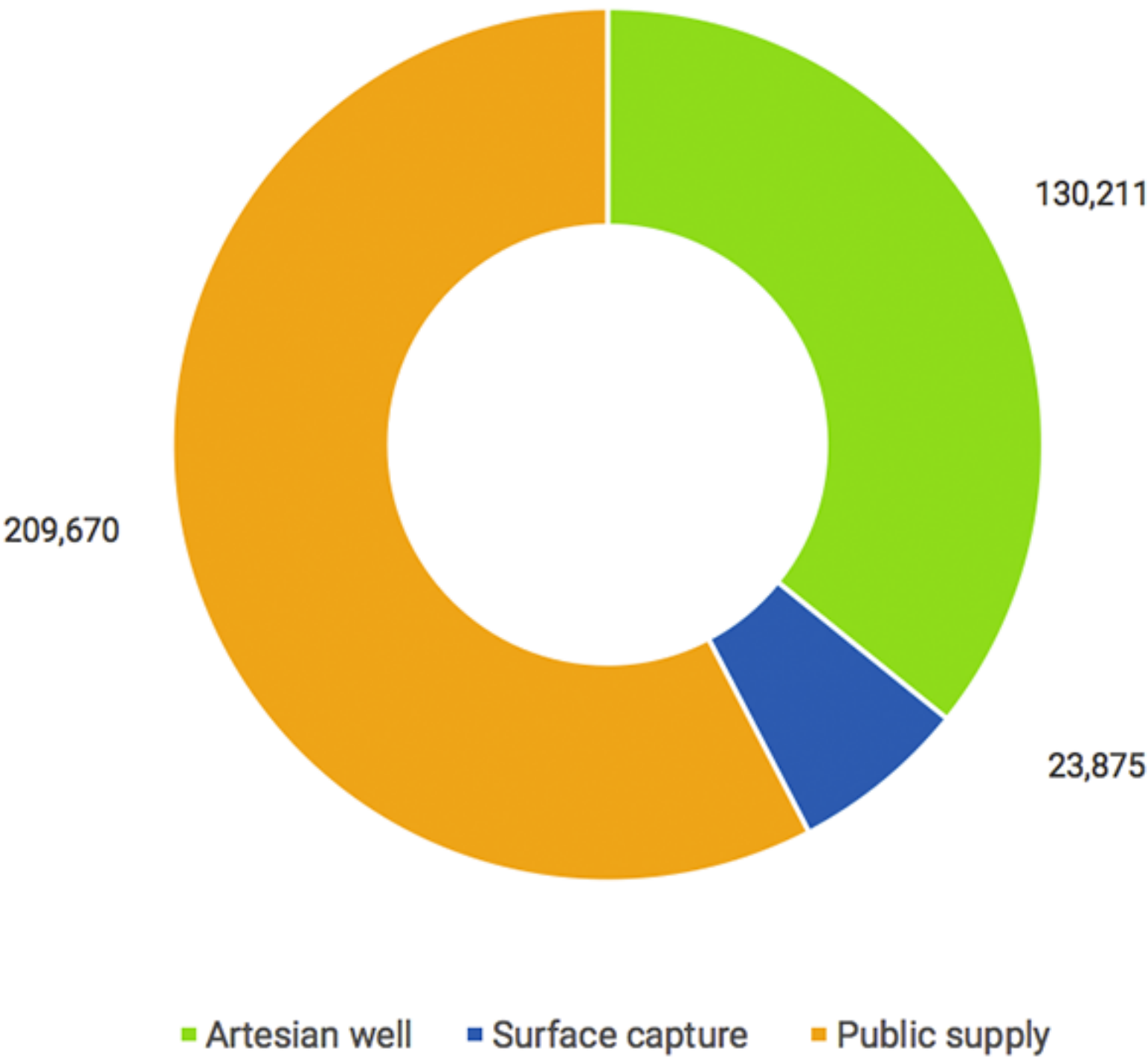
<sup>17</sup> The Water Quality Index (WQI or IQA) was developed by the National Sanitation Foundation of the United States in 1970, through an opinion survey with various specialists in environmental science. Its calculation involves nine parameters considered the most important for characterization of water quality: dissolved oxygen; thermo-tolerant coliforms; pH; biochemical oxygen demand; nitrate; total phosphate; water temperature variation; turbidity; and total solids.

# WATER CONSUMPTION AND GENERATION OF EFFLUENTS

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Cemig’s total water consumption in 2017 was 363,756m³, according to the detailed data presented in the diagram below.

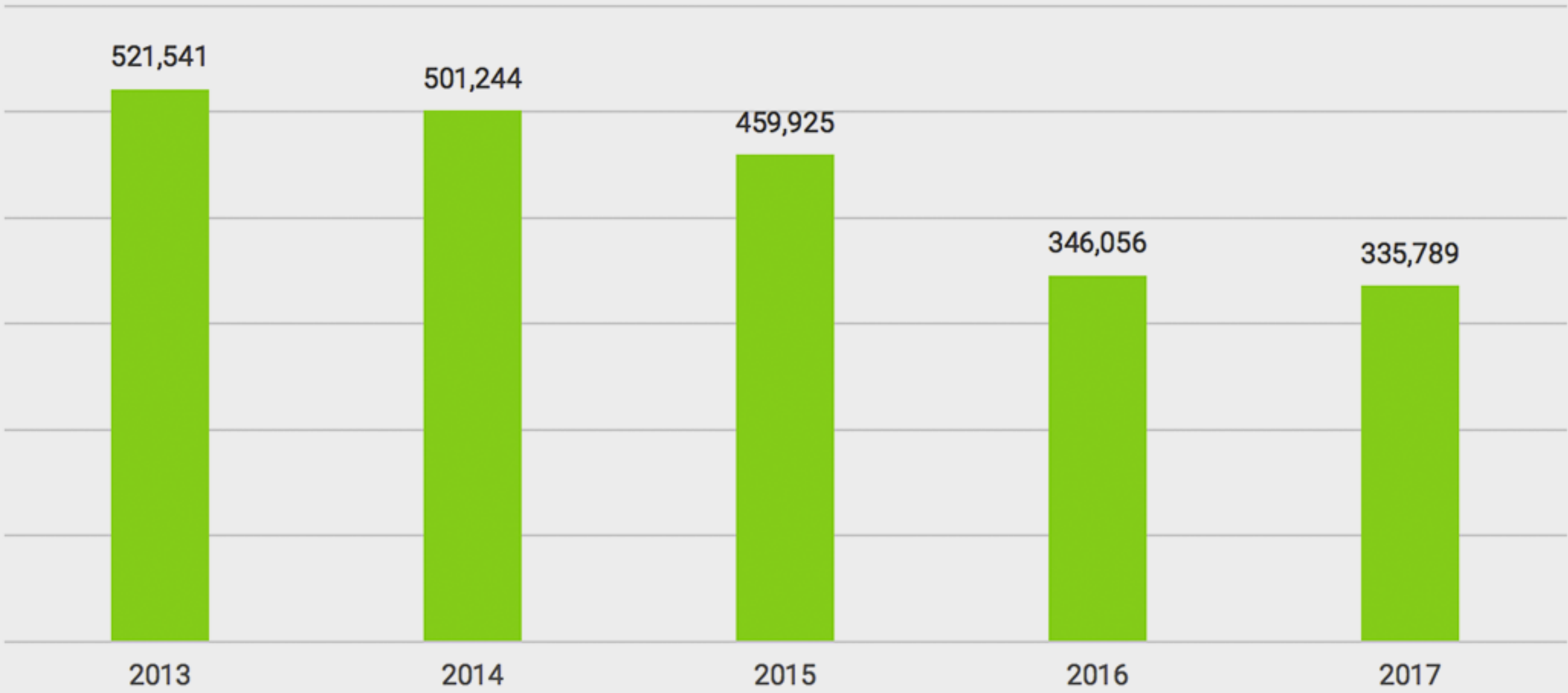
## Total water consumption (m³)





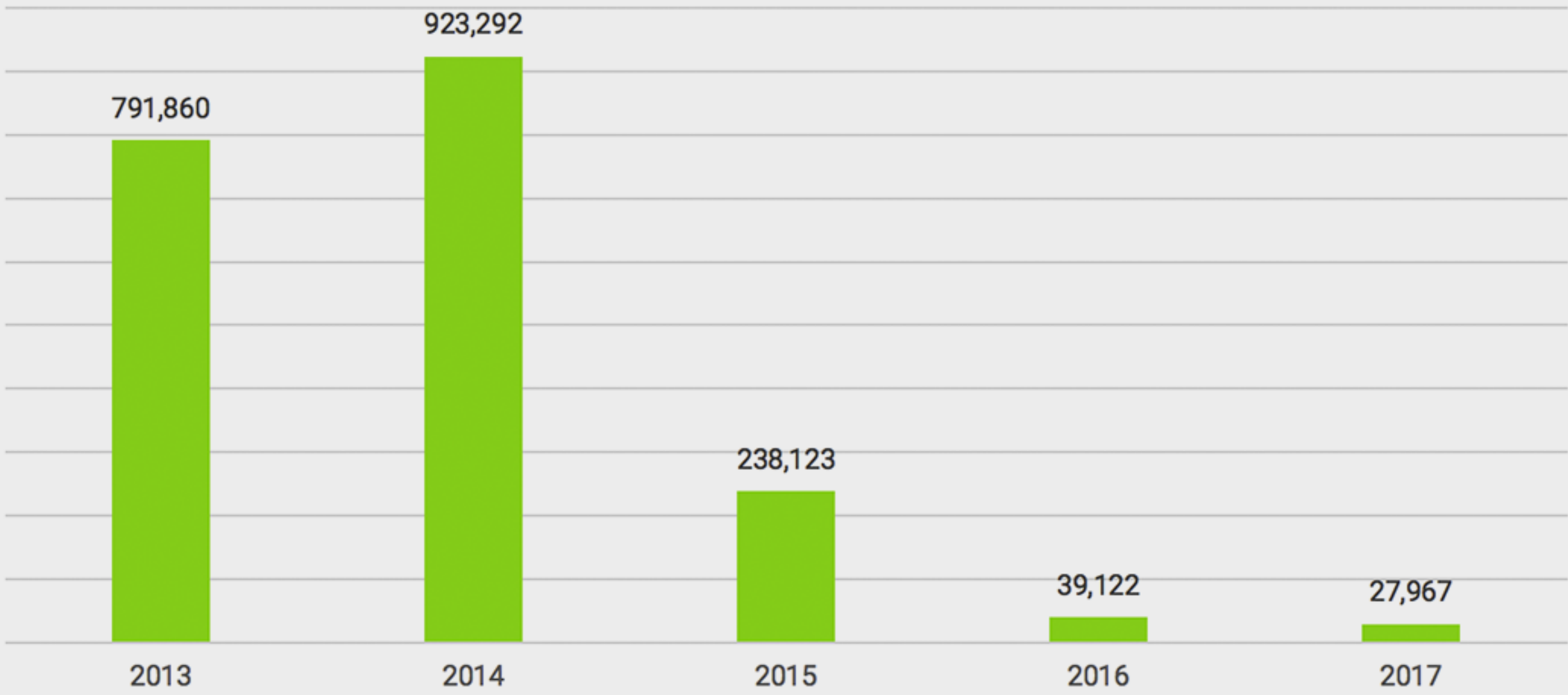
Cemig’s total consumption of water for administrative purposes was 335,789m³, which includes public supply, surface capture and artesian wells.<sup>18</sup> This is a reduction of 35.6% over the last 5 years, as shown in the next chart:

Water consumption – Administrative (m³)



Industrial water consumption for cooling of thermal plants totaled 27,967m³, which was 28.5% less than in 2016. This is mainly due to the end of commercial operation of the Barreiro thermoelectric plant. The contract between Cemig and Vallourec to operate that plant ended in December 2016.

Water consumption – Industrial (m³)



Water used for power generation is not characterized as consumption, since all the water returns to the watercourse. Hence the volume is not included in the numbers shown above.

Cemig met its target for reduction of total water consumption in 2017, with a reduction of 77.2% from its total consumption in 2011 (the base year for the target). For more details on Cemig’s Objectives and Targets, [click here](#).

The Igarapé thermal plant does not generate effluents, because cooling water is returned to the watercourse (after collection from the river surface). Effluents generated in the administrative units are discarded into the public network or into controlled septic tanks and therefore do not directly affect any watercourse. In 2017, 268,631 m³ of sanitary effluents were generated.

<sup>18</sup> All Cemig's capture of underground water is in accordance with the appropriate concession grants.





Fish Release Program at the Itutinga Environmental Station promotes the release of Piracanjuba pups.

# BIODIVERSITY

GC7

GC8

SDG15

With its predominant renewable energy sources, Cemig has an intrinsic relationship with biodiversity. Its commitment to conservation of flora and fauna has been formalized through its [Biodiversity Policy](#). The Company operates in two biodiversity hotspots<sup>19</sup> – the Cerrado, and the Atlantic Forest – and in watercourses, where it is responsible for management of more than 3,500 square kilometers of fresh water in its reservoirs.

Cemig operates in different businesses, and for each one specialized studies are made which characterize, evaluate and establish environmental programs for the control, mitigation and offsetting of any negative effects, and the maximization for positive effects. Here there is a synergy between research, innovation and the practice of solutions which, when taken together with Cemig’s competence, add value to society and to the biomes where the Company operates. Since the main source of the Cemig’s generation is water, which always involves a need for spatial rearrangement when building a new hydroelectric plant – and since water and biodiversity are intimately linked – Cemig gives special attention to conservation of biodiversity of the environment in which it is creating a project. There is a legal commitment to recover, protect and conserve forests, rivers and fauna in areas surrounding the projects. In these activities Cemig is contributing to compliance with UN Sustainable Development Goal 15: “Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.”

Due to the large number of hydroelectric plants that Cemig manages and their degree of interference in the aquatic medium, in particular there are effects on fish, which are of great environmental importance, and are thus the subject of significant attention and control by the Company.

At the same time, being Brazil’s largest electricity distributor in terms of lines and networks, Cemig understands the critical role of interference by these electricity networks in vegetation, and takes action to minimize risks of disconnection and outages, with careful and sustainable management of vegetation.

<sup>19</sup> Hotspots: highly threatened areas of great biological importance for the planet as a whole.

## CARE FOR FISH POPULATIONS

To evolve effective longer-term measures to conserve fish populations in the State, and prevent fish deaths in the group’s hydroelectric plants, Cemig has developed its Peixe Vivo (Fish Alive) Program.

This Program is based on three pillars: Conservation and Handling Programs – adoption of best practices for fish conservation; Research and Development – widening scientific knowledge on fish species, and providing inputs for more efficient conservation strategies; and Community Relationship - disseminating the Program’s activities and results to the public, and seeking their involvement in strategic planning.

In its 10 years of existence Peixe Vivo has supported 18 research projects that have contributed to knowledge about native fish populations and species, resulting in improvement of handling and conservation programs on solid scientific bases. Many of these studies have also been academic theses in final qualifications of various professionals, resulting in a large number of publications in scientific journals.

In 2017, approximately R\$ 4 million was invested in projects and activities for conservation of fish populations, including expenditure on research projects, maintenance of fish culture stations, environmental education and community relationship events.



The table below shows the main figures for this Program:

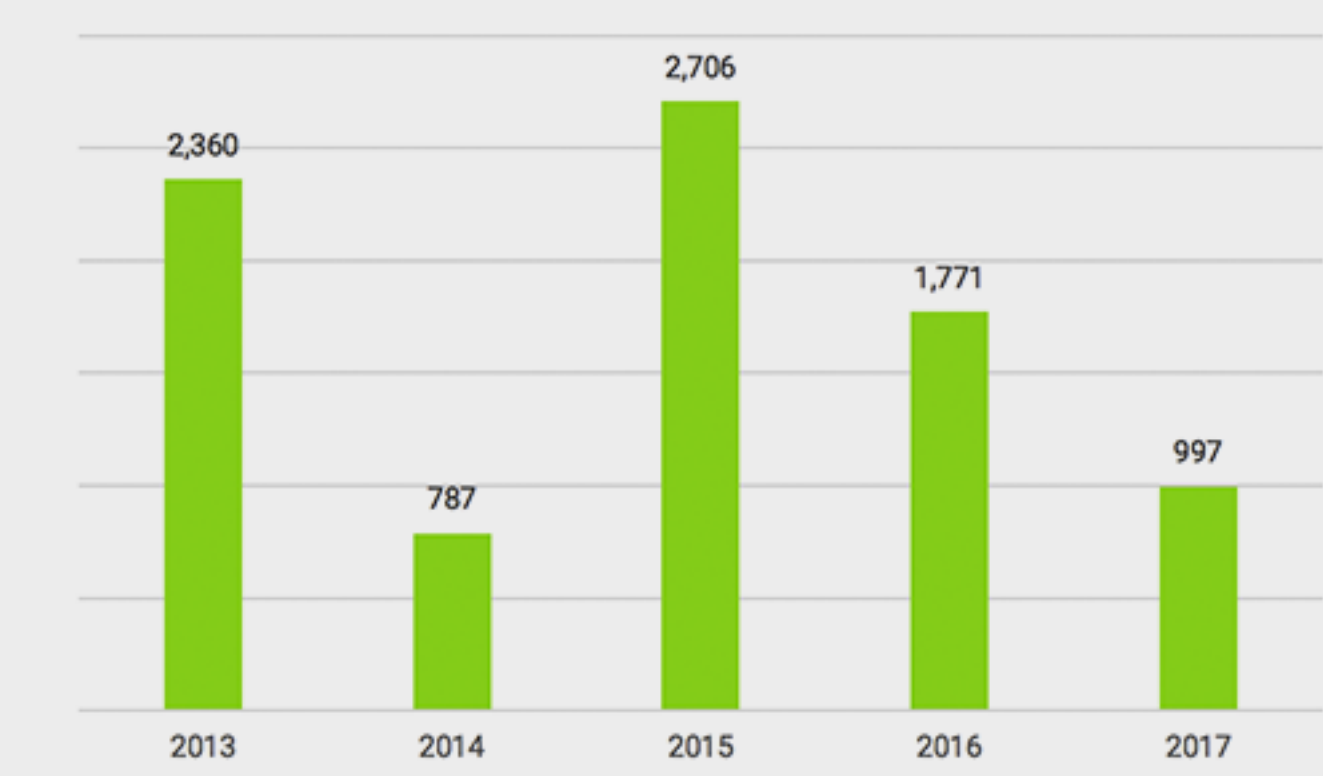
Peixe Vivo Program: Indicators		2017
Programs for conservation of fish and management of river basins	Investment in research projects and fish handling (R\$)	R\$3,966,391
	Biomass affected (kg) [1]	997
Research	Introductory science pupils	15
	Master's degree students	12
	Doctorate students	12
	Researchers [2]	49
	Scientific output (papers)	40
Relationship with the community	Participants in fish repopulation actions	210

[1] Measures the volume of dead fish (in kg) resulting from maintenance and operation of plants.  
[2] The figure for 'Researchers in 2017' comprises post-doctoral students, technical support and investigators.

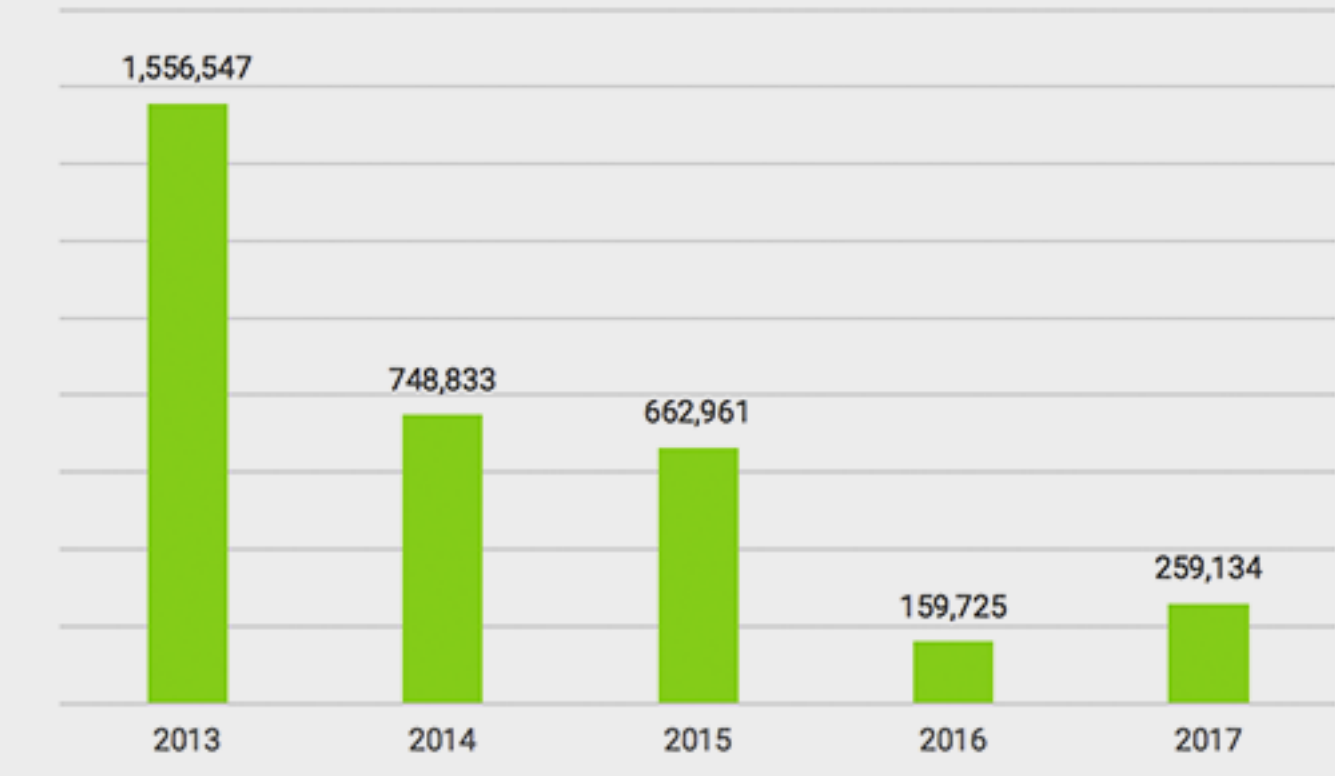
Generation by hydroelectric plants has a direct impact on fish populations, and the result can be injury to fish, and fish deaths. To monitor its mitigation of this impact, since 2007 Cemig has adopted an indicator to reflect the efficiency of its protective measures. This is the Cemig Biomass Affected (BA) indicator – the weight, in kilograms, of the total of fish dead as a result of operation and/or maintenance of its hydroelectric plants. The BA for 2017 was 996.78 kg, which is lower than the Company’s own internal target of a minimum of 1,784 kg<sup>20</sup>.

<sup>20</sup> The limits were reassessed in 2017, considering the performance of the index in each recent year and the respective targets. With the agreement of the Superintendencies involved, a new limit for BA, higher than for 2016, was accepted. The BA limit does not include fish deaths at the plants of the joint venture company Aliança Geração de Energia S.A.

Biomass Affected (kg)



N° of fingerlings introduced



A total of 260,000 fingerlings were produced in 2017, representing approximately 7 tons, and these were released in 25 separate release operations, involving 210 people from local communities in 16 municipalities. In response to the growing interest of stakeholders, in the medium term the Program intends to enhance monitoring of the efficiency of fish releases, developing projects on a scientific basis with, for example, physical and genetic marking of the individual fish released.

Since the creation of the Peixe Vivo Program, its actions and those taken in partnership with research institutions have reduced fish deaths by 71%, with a consequent reduction of 98% in the value of environmental fines arising from accidents, and no reports of interruption of operations.

In 2017 seven research projects were carried out, with funding from the R&D program and the Company itself: 40 works were published related to the projects or actions of the Peixe Vivo Program, presenting results for projects in progress or completed. Two of the reports supported by the Program received an honorable mention in 2017 at the 3rd International Symposium of Ecology and Evolution and 13th Brazilian Ecology Congress. This event was held in the town of Viçosa in Minas Gerais, on the theme "Multiple ecologies: evolution and diversity." For more details, see: <http://anais.ecologia2017.com.br/trabalhos.htm>

The Peixe Vivo Program's website was also updated in 2017, bringing all research projects carried out or supported, and all the published files, up to date. There is more information at: [www.cemig.com.br/en-us/Company\\_and\\_Future/Sustainability/Programs/environmental\\_programs/peixe\\_vivo/Pages/default.aspx](http://www.cemig.com.br/en-us/Company_and_Future/Sustainability/Programs/environmental_programs/peixe_vivo/Pages/default.aspx)

# HANDLING OF VEGETATION

EN11	EN12	EN13	EN34	EU13
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Vegetation handling is involved in all phases of the projects and facilities of Cemig D (Distribution): planning, implementation, maintenance, and de-activation. At each stage it aims to reduce or eliminate negative impacts on vegetable formations, or enhance the positive impacts of the power system on the forests and biodiversity in the concession area. It involves technical and operational support activities, taking into account requirements of the legislation, activities of public bodies and other related entities, and best vegetation handling practices, in line with the Company’s objectives, targets and values.

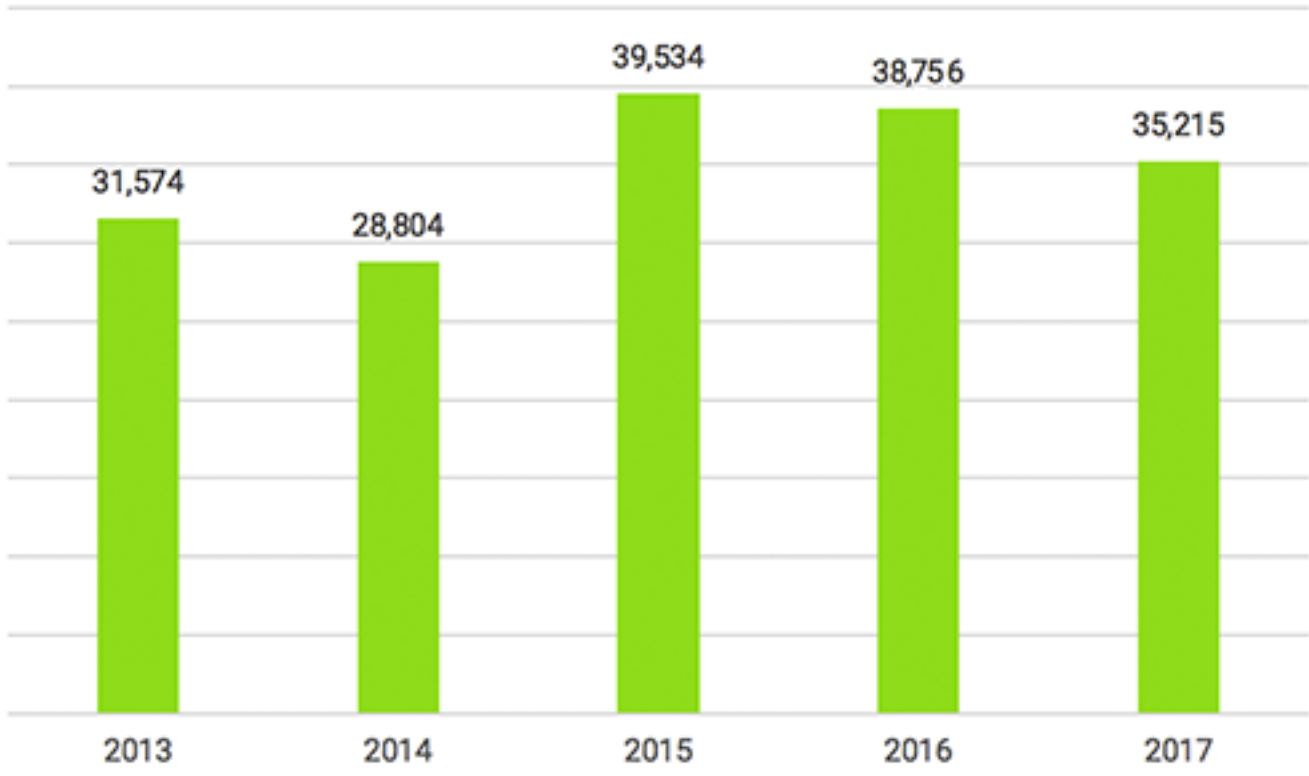
The approach in vegetation handling process is preventive maintenance – aiming to reduce the probability of service failure or outage. After periodic inspections of the electricity system, necessary maintenance actions and services, including interventions in vegetation, are listed. Intervention is by preference preventive – rather than to repair the consequences of any adverse events. The frequency of inspections is based on knowledge of the behavior of trees and the effect of interventions on them, both in the city and the countryside.

Distribution network engineering is employed to reduce outages caused by trees, especially in urban environments. Outages have been reduced by the growing use of protected and insulated networks: Cemig has now adopting protected networks as the minimum standard for medium voltage lines, and insulated networks for low voltage lines. There is a continuous effort for technological improvement, and the next aim is double-layer protection (which has higher tolerance to contact with earthed conductors such as trees) in medium voltage networks in urban environments.

In planning to remedy impacts caused by trees, Cemig is preparing for a higher incidence of climate change events – expecting the risks presented by vegetation to increase. Use of weather monitoring and forecasting systems makes it possible to allocate electricity system repair teams to produce a faster response to adverse events, reducing outage time.

Cemig compiles the FSS (Sustained Simple Frequency) indicator of failures in network equipment, which provides data on tree-related adverse events in the medium and low voltage networks. This aims to provide a better characterization of tree-caused outages and thus orient efforts to reduce their occurrence, improving the overall continuity indicators.

## FSS - Number of outages caused by trees



All information received through Cemig’s internal communications channels is analyzed and treated with appropriate care. A total of 52,526 reports and complaints of an environmental nature were processed in 2017 – solutions were provided to 52,353 of these. The main subjects were: trees touching the network, insulating oil leakage or contamination, noise caused by equipment on the network, and other effects on the environment.

## Environmental guidelines and controls – measures to reduce the impacts of transmission and distribution networks

Cemig’s internal procedure IT-G.02.01-001b - Environmental Guidelines and Controls - sets out care and methods to be adopted when building lines and networks. The Company changes the path of existing networks to avoid interference in areas with high tree density, or even upgrades circuits in these areas to higher technology standards.

For distribution networks or lines projects in rural areas, the practice of Pathway Engineering gives priority to routes that interfere as little as possible with forest fragments, and also adopts higher structures to minimize removal of vegetation when building distribution lines. When planning for lines, networks and substations that might hinder tourism, or cultural or speleological assets, there are measures to eliminate impacts such as alternative routes, underground networks, insulated networks, taller structures, and when these are not possible, measures to minimize impacts as much as possible. For impacts on fauna there are specific procedures for removal of birds’ nests on distribution networks and in substations, and other measures to avoid birds and small animals coming close to the equipment.



Cone to discourage bird perch



## The mobile tree analysis laboratory - Lamanar

The main purpose of the Lamanar laboratory (Laboratório Móvel de Análise de Árvores) is to develop and calibrate a methodology for assessing the health of trees, assisted by its instrumentation. Its development arose from Cemig’s R&D project 364 of 2015. It can also be used by prefectures and research institutions, to improve the methodology of assessment which that project developed.

The laboratory functions in a trailer containing equipment to analyze trunks and branches. It is possible to: visualize the interior of a tree’s trunk, using mechanical waves; analyze the mechanical force borne by trees in high winds; visualize roots using electromagnetic radar; and measure tree heights, trunk diameters and other distances.

The laboratory improves Cemig’s assessment of the health of trees, and their monitoring over time – thus reducing the risks of adverse events in the electricity system caused by falling trees; and also helps enhance training of professionals in urban tree research, teaching and management.

A presentation on the Lamanar was given at the Electricity Technology Innovation Congress (Citenel - Congresso de Inovação Tecnológica em Energia Elétrica) in 2017. It introduced prefectures to the knowledge acquired in this R&D project, through mini-courses in the Cemig’s Urban Afforestation Circuit (Circuito de Arborização Urbana), and lectures and courses provided by the prefectures themselves. In December 2017 Cemig selected two further R&D projects, which continued Project 364, for enhancement of the methodology of assessing trees through analysis of roots, and also the development of an application to calculate the risk of branches breaking onto electricity networks, based on their physical and mechanical conditions.

## 7<sup>th</sup> Urban Afforestation Circuit

Cemig’s Urban Afforestation Circuit (Circuito de Arborização Urbana) is a seminar event in which it disseminates best practices, and orients municipalities in Cemig’s concession area, on urban afforestation. City Halls, environmental authorities, NGOs, public bodies and students discuss subjects related to afforestation, the electricity network, and tree cultivation practices in cities. Some of the subjects dealt with are: techniques for planting and pruning; production of high quality saplings; assessment of risks in plant handling; maintenance and implementation of urban afforestation; georeferencing of trees; urban forests and others.

This project is held annually in various different regions of Minas Gerais State, depending on mapping produced by the technical teams. It aims to enhance the work of professionals involved in urban planning, electricity distribution and afforestation, enabling the participants, in their work routines, to incorporate knowledge on various aspects of planning, planting and maintenance of trees in the urban environment. This aims to prevent future incidents that might create risk for Cemig’s consumers, the community in general, and cities’ urban assets.

The host cities of Cemig’s 7<sup>th</sup> Urban Afforestation Circuit, in 2017, were the municipalities of Betim and Lagoa da Prata.

## RIPARIAN FORESTS RECOVERY PROGRAM

Formation of major hydroelectric reservoirs creates a wide perimeter lacking the usual forest formations. When they exist, these formations are often made up of species that are adapted to a drier environment, and are thus not well adapted to the high humidity of the soil that results from the rise in the groundwater table, and the variations in the level of the reservoir. This creates the need for implanting, recovering and conserving riparian forests around the reservoirs to maintain the ecological processes. For about 30 years Cemig has been carrying out research, in partnership with universities, to support programs to plant riparian forests around its reservoirs. Through its own R&D projects, the Company has sought to study the technological challenges of the electricity sector and propose innovations to deal with them. Partnerships with rural producers in the areas surrounding reservoirs have been fundamental for the success of these actions. A total of 11.6 hectares were reforested in 2017 around the Cemig’s reservoirs.

The Company has de-activated the tree nurseries and the forest seeds laboratory. Saplings are now procured externally to meet specific internal demands of projects as they occur with municipal prefectures and other institutions.

## A SUCCESS STORY: THE VOLTA GRANDE HYDROELECTRIC PLANT

The theme chosen for Cemig’s 2016 Biodiversity Report was a case study comprising R&D project 484 – Effectiveness and sustainability of the riparian forests of the Volta Grande hydroelectric plant reservoir in conservation of ecological processes and biodiversity (Efetividade e sustentabilidade das matas ciliares do reservatório da UHE Volta Grande na conservação de processos ecológicos e biodiversidade). As a result of this work a book was launched in partnership with the Federal University of Ouro Preto (UFOP): Restoration and Conservation of Riparian Forests in Hydroelectric Reservoirs (Restauração e Conservação de Matas Ciliares em Reservatórios Hidroelétricos).

This work identified the ecosystem services provided by the riparian forests of the Volta Grande hydroelectric plant reservoir. These include the conservation of natural ecosystems, and the supply of goods and services such as water and food. As well as providing wood, the forest also supplies seeds, fruits, medicinal and ornamental plants, fibers and coloring agents. The riparian forests also shelter organisms that play important roles in the maintenance of the environment itself, providing also other services that have major influence on the climate, hydrological cycles, biodiversity, quality of water and of the atmosphere, and fertilization of the soil.

For more details on R&D project 484, see: <http://www.prociliar.ufop.br/>

Click [here](#) to see Cemig’s Biodiversity Report for 2016. It is published every other year.

# CONSERVATION UNITS

To conserve biodiversity, Cemig maintains certain areas of remaining forests which have a high degree of conservation and are very important for the biomes where they are. Two of these areas are classified as Private Natural Heritage Reserves (Reservas Particulares do Patrimônio Natural or RPPNs) by Federal Law 9985/2000, which instituted the National Conservation Units System (Sistema Nacional de Unidades de Conservação or SNUC). Four other dedicated areas are referred to internally in Cemig as Environmental Stations, since they have not been included in any of the official categories of conservation units.

Conservation Unit	Project	Location (all are in Minas Gerais)	Area (hectares)
Fartura RPPN *	Irapé Hydroelectric Plant	Capelinha	1,455
Galheiro RPPN *	Nova Ponte Hydroelectric Plant	Perdizes	2,847
Igarapé Environmental Station	Igarapé Thermal Plant	Juatuba	105
Itutinga Environmental Station	Itutinga Hydroelectric Plant	Itutinga	35
Peti Environmental Station	Peti Small Hydroelectric Plant	São Gonçalo do Rio Abaixo	459
Machado Mineiro Environmental Station	Machado Mineiro Small Hydroelectric Plant	Ninheira	3

\* RPPN = Private Natural Heritage Reserve.

For more information, click [here](#).





Belo Horizonte-MG, Brazil. Ruany Gomes Xavier Maia, Adelmo Antonio Correia, Arthur Chaves de Paiva Neto, team of Hydrometeorologists of Cemig.

# CLIMATE CHANGE

DMA

EC2

EN19

CG7

SGD13

The global importance of debate on climate change underlines the special attention that Cemig dedicates to several key factors: the structure of its energy source matrix – predominantly renewable-sourced; identification of business risks and opportunities that climate change could create; and the search for solutions to adapt to and mitigate any such adverse effects on its business.

Involvement of senior management in the discussion of these issues makes Cemig’s activity on this subject more effective – as indicated by the establishment of voluntary targets for emissions reduction (even though Cemig currently has very low greenhouse gas emissions), electricity consumption, and electricity losses.

Cemig identifies potential risks and opportunities to its business and seeks solutions to adapt and mitigate the possible effects that might affect it.

The most likely risks associated with climate change:

## Regulatory changes:

The Brazilian government, through its National Climate Change Policy, has established, as a voluntary target, reduction of between 36.1% and 38.9% in Brazilian greenhouse gas emissions by 2020. It ratified the Paris agreement in 2016, and assumed the commitment, in terms of Nationally Determined Contributions (NDCs), to reduce greenhouse gas emissions by 37% from their 2005 levels, by 2025 – with a subsequent indicative contribution of reducing greenhouse gas emissions by 43% (from 2005 levels) in 2030. Cemig considers that the main potential impact associated with this risk is an increase in operational costs, and, to mitigate this impact, seeks opportunities for expansion of generation across low-carbon renewable sources. Another response for mitigating this risk is participation in industry associations such as the CEBDS (Brazilian Entrepreneurs Council for Sustainable Development), which promotes discussion on the risks associated with new regulations. There is more information on this in Cemig’s CDP for 2017, item CC5.1.

## Carbon taxation:

Cemig has a low-carbon energy source matrix, but operates one thermoelectric plant burning fossil fuel - the operations of which could be affected if taxation on carbon is established in Brazil. To mitigate this risk, Cemig promotes measures to reduce Scope 1 carbon emissions, since in its assessment there is the possibility of such a tax applying to these emissions.

## Cap-and-trade schemes:

Establishment of a market to trade in greenhouse gas emissions on a cap-and-trade basis in Brazil could result in the need for more planning by Cemig, in relation to compliance with specific regulations of the market, especially those on monitoring and verifying emissions. To mitigate this risk, Cemig is seeking to identify projects that can be generators of carbon credits, and make long-term contracts with assurance and certification companies, thus reducing, as of now, the probability of this risk materializing for the Company. Also, when assessing acquisition of projects that use fossil fuels, Cemig makes internal analysis of the carbon risk and its financial impact for the Company, that is to say, the financial risk of the project in the possible future scenario of greenhouse gas emissions being priced in Brazil. Another way of mitigating this risk is through participation in the project Simulation of an Emissions Trading System project, an initiative of the GVCes (Sustainability Studies Center of the Getúlio Vargas Foundation, São Paulo Management School).



## Other regulatory risks:

Brazil's Mining and Energy Ministry has published its National Energy Efficiency Plan (Plano Nacional de Eficiência Energética or PNEf), to put forward measures to stimulate energy efficiency in Brazil. This plan adopts a target of reducing electricity consumption by 10% by 2013, from 2004 level. This could mean reduction of electricity supply by Cemig to its consumers, with an effect on the Company's business. Cemig's way of mitigating this risk is through participation in discussion forums on the law, at federal, state and municipal level. Additionally, it promotes [Energy Efficiency Programs](#), both residential and industrial.

## Changes in rainfall patterns:

Climate change can result in alterations of seasonal rain patterns, with more pronounced events of extreme rain and extreme drought, as well as changes in their geographical distribution. There could also be a change in average precipitation levels, which would change the quantity of water reaching the reservoirs of hydroelectric plants. Since Cemig's electricity output is basically hydroelectric, these changes could result in a reduction of its generation capacity. The hydrological risk is managed taking into account the random nature of climate phenomena, even before considering the effects from climate change. To deal with this, Cemig has a specific organizational structure, entirely dedicated to the subject, which supports the decisions of the Company's existing risk management committees. This aims to provide efficient treatment of the corporate risks involving operational, commercial, financial and regulatory aspects of the companies of the Cemig group, particularly in relation to tariff adjustments and hydrological restraints in the sector. Cemig also participates in the Energy Reallocation Mechanism (MRE), the purpose of which is to share the hydrological risks of the plants which have high water inflows and generation, transferring energy to plants in situations of low water inflows and low generation. Other forms of mitigating this risk are available to be seen in the Cemig 2017 CDP.

## Changes in average temperature:

Climate change can result in higher average temperatures, and changes in the patterns of both rains and droughts, and indirectly can increase some risks to the electricity transmission system, since prolonged dry conditions maximize the risk of fires. Fires inside power line pathways, or close to them, can cause unavailability of transmission lines. To mitigate this risk, Cemig is continuously inspecting and cleaning transmission power line pathways, to maximize safety, and the availability of the transmission function (this is limited to the minimum removal of vegetation, avoiding any cutting where there is not interference with transmission lines).

## Changes in extremes of rainfall and drought:

Intense rains over a short period, accompanied by gale and lightnings, can cause physical damage to the facilities that transport and distribute power, leading to its unavailability, and an increase in Cemig's costs – including in some cases required compensation to consumers for outages. These phenomena are increasingly associated with the effects of an adverse micro-climate, typical of major urban centers. The methods for management of these effects seek, over the medium term, to reduce the scale of this risk through preventive adaptation measures, such as appropriate handling of urban trees by pruning, operation of weather stations, meteorological radar able to provide increasingly accurate forecasts of storms and their intensity, and the emergency plan with allocation of maintenance teams for reestablishment of electricity supply.

## Change in consumer behavior:

High temperatures can cause an increase in electricity consumption, overburden the distribution system, in some of the more critical regions of the State, tending to cause lower availability of supply to consumers in these regions. This risk is managed through: diagnosis on the electricity system to establish where expansion works are needed; monitoring of operational conditions; and re-prioritization of works. There is more information on this in Cemig's CDP 2017, item CC5.1.

The aspects of climate change that influence Cemig's strategy are:

## Development of low carbon businesses:

Cemig has identified opportunities for business and market advantage arising from its low carbon energy source matrix. These indicate as priority directions to be taken: (i) implementation and updating of generating plants from renewable sources in which Cemig already has expertise; and (ii) investment in new energy sources, especially through the company Renova Energia.

## Carbon risk – assessment, and the need to adapt to regulatory changes:

In all acquisitions of assets Cemig adopts the practice of environmental due diligence – assessment of the possible financial impact of any increase in its greenhouse gas emissions through the new asset, in view of the possibility of having to take on the related emission costs as a result of new regulations.



## Need for mitigation of climate change effects:

Although it already has low greenhouse gas emissions intensity, Cemig makes efforts to reduce them. These efforts include setting of targets for emissions reduction, for own electricity consumption, and electricity losses.

## Need for adaptation to climate change effects:

Since it is predominantly hydroelectric, Cemig's portfolio of generation assets has low greenhouse gas emissions intensity, but is subject to some possible consequences of climate change. Cemig thus invests in improvement of systems for forecasting climate events; improvement of the infrastructure of its plants, transmission lines and distribution networks, to deal with the consequences of those events; and improvement of future forecast of water availability for its generation plants.

Over the years Cemig has taken a series of initiatives on efficient use of electricity by clients, and these have reduced greenhouse gas emissions. Its wholly-owned subsidiary Efficientia (an Esco) has been implementing energy efficiency projects at Cemig's clients since 2002, mainly in industry. Efficientia also provides: technical and financial feasibility services in energy efficiency projects for clients; implementation of co-generation projects and utilities centers; consulting for industrial companies to optimize use of their available energy sources; in-person and online training in energy management; and consulting for ISO 50001 (Energy Management System) certification.

In 2017, projects put in place by Efficientia avoided emission of 5,005.8 tCO<sub>2</sub>e/year in clients of the industrial and commercial sectors. For more about Efficientia, [click here](#).

The Energy Efficiency projects in Cemig's [Smart Energy Program](#) are important instruments for reduction of indirect emissions by third parties because they reduce consumption of electricity by final consumers, by replacing obsolete electrical equipment that has a high level of consumption, and through initiatives in environmental education. In 2017, these projects avoided emission of 2,219 tCO<sub>2</sub>e.

For more details on Cemig's initiatives related to climate change, see this [link](#).

Since 2007 Cemig has responded to the Carbon Disclosure Project (CDP), an international nonprofit organization that encourages sustainable economies. In its report, Cemig makes a rigorous listing of the risks and opportunities to its businesses arising from climate change and the measures for monitoring and control. Cemig regards the CDP as an instrument of management, in a scenario of growth in the level of information and consistent initiatives in carbon management. In 2017, CDP Latin America, in assessment for its Climate Change Program, listed Cemig among the leading companies in management of climate change in Latin America, for the quality of information disclosed to investors and to the global market.

This is the sixth year in which Cemig has received recognition in the form of an award from CDP. Selection takes into consideration the level of detail given by the responding company in its responses on criteria such as: management of risks; commitment to mitigation; and initiatives for reduction of greenhouse gas emissions.

The best results indicate a high level of transparency in information disclosure on the subject, providing investors with consistent content on climate change management.

To see Cemig's 2017 CDP report, [click here](#).

The US consultancy Energy Intelligence placed Cemig 25<sup>th</sup> in its Top 100 Green Utilities ranking. This is a ranking of the one hundred electricity companies, worldwide, with the highest installed capacity for generation from renewable sources and the lowest levels of emission of greenhouse gases (CO<sub>2</sub>). In total, the companies analyzed are responsible for more than half of the world's generation capacity.

In 2017 Cemig published its Greenhouse Gas Emissions Inventory, with assurance provided by an independent auditing. The complete document can be seen [here](#).

Cemig is participating in the Simulation of an Emissions Trading System project, an initiative of the GVces (Sustainability Studies Center of the Getúlio Vargas Foundation, São Paulo Management School).

This aims to generate knowledge, jointly with entrepreneurs, on the functioning of an emissions trading system, which is one of the leading economic instruments for policies to mitigate greenhouse gas emissions so far implemented in various countries. The project gives Cemig the opportunity to operate in simulation, based on set rules and parameters, through an online trading platform of the Environmental Securities Exchange of Rio de Janeiro (Bolsa de Valores Ambientais or BVRio).

In 2017 Cemig organized the Ideia Iluminada competition, to promote solutions for reduction of fuels consumption, efficiency in consumption of electricity and water, and reduction in waste generation. 44 competing projects were submitted. Four were selected, of which one relates to reduction of fuel consumption: the 2C Project - Vehicle Sharing. This is a sharing system (hitchhiking) for car travelers with the same origin and destination, mainly helping reduce fuel consumption. The projects will be implemented in 2018.





Arthur Chaves de Paiva Neto, hydrometeorologist from Cemig in Belo Horizonte-MG, Brazil.

## CLEAN DEVELOPMENT MECHANISM (CDM) PROJECTS

Cemig has projects at various stages for obtaining the Certified Emission Reductions (CER) certificate – including large and small hydroelectric plants, and solar plants:

References	Project	Status	Estimated annual reduction of CO <sub>2</sub> e(t)	Credit period	Credits issued
3898	SPC Guanhães: 4 SHPs, 44 MW	Registered	62,949	Jan. 2013 to Jan. 2020 (Renewable)	-
3922	Baguari Hydroelectric Plant, 140 MW	Registered	63,234	Apr. 2011 to Apr. 2018 (Renewable)	176,971
4788	Cachoeirão Hydroelectric Plant, 27 MW	Registered	23,444	Feb. 2012 to Feb. 2019 (Renewable)	167,097
9056	Settesolar Solar Plant, 3 MW	Registered	942	Feb. 2013 to Feb. 2020 (Renewable)	-
6382	Pipoca Small Hydroelectric Plant, 20 MW	Registered	17,051	Dec. 2012 to Dec. 2019 (Renewable)	-
9893	Paracambi Small Hydroelectric Plant, 25 MW	Registered	33,993	Jul. 2014 to Jul. 2021 (Renewable)	-
9282	Santo Antônio Hydroelectric Plant: 3,568 MW	Registered	4,015,196	Jan. 2013 to Dec. 2022 (Fixed period)	1,057,929

For more details on these projects see: <http://cdm.unfccc.int/>

## EMISSIONS

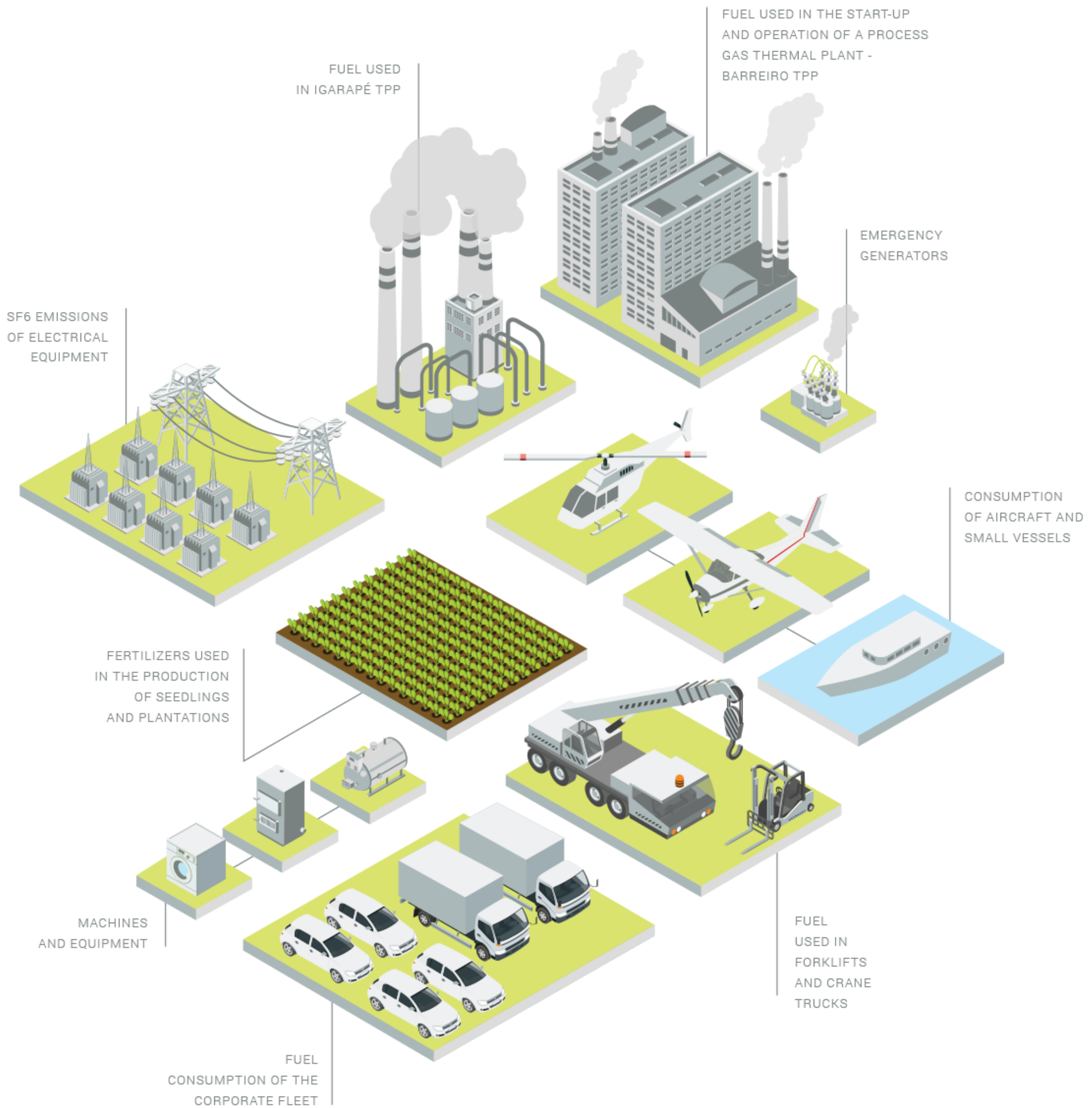
EN15	EN16	EN17	EN18	EN20	EN21	EN30
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In 2017 Cemig’s direct (Scope 1) emissions totaled 48.849 tCO<sub>2</sub>e. This was equivalent to 0.6% of its total attributable greenhouse gas emissions (GHG). Scope 1 emissions were higher than in 2016, mainly due to dispatching of the Igarapé thermal plant for short periods of time, and also due to environmental restraints (low volume of the Paraopeba River), which caused operation outside the best ranges of efficiency.



The figure below shows the GHG emission sources included in Cemig's Scope 1:

Scope 1: Emission Sources

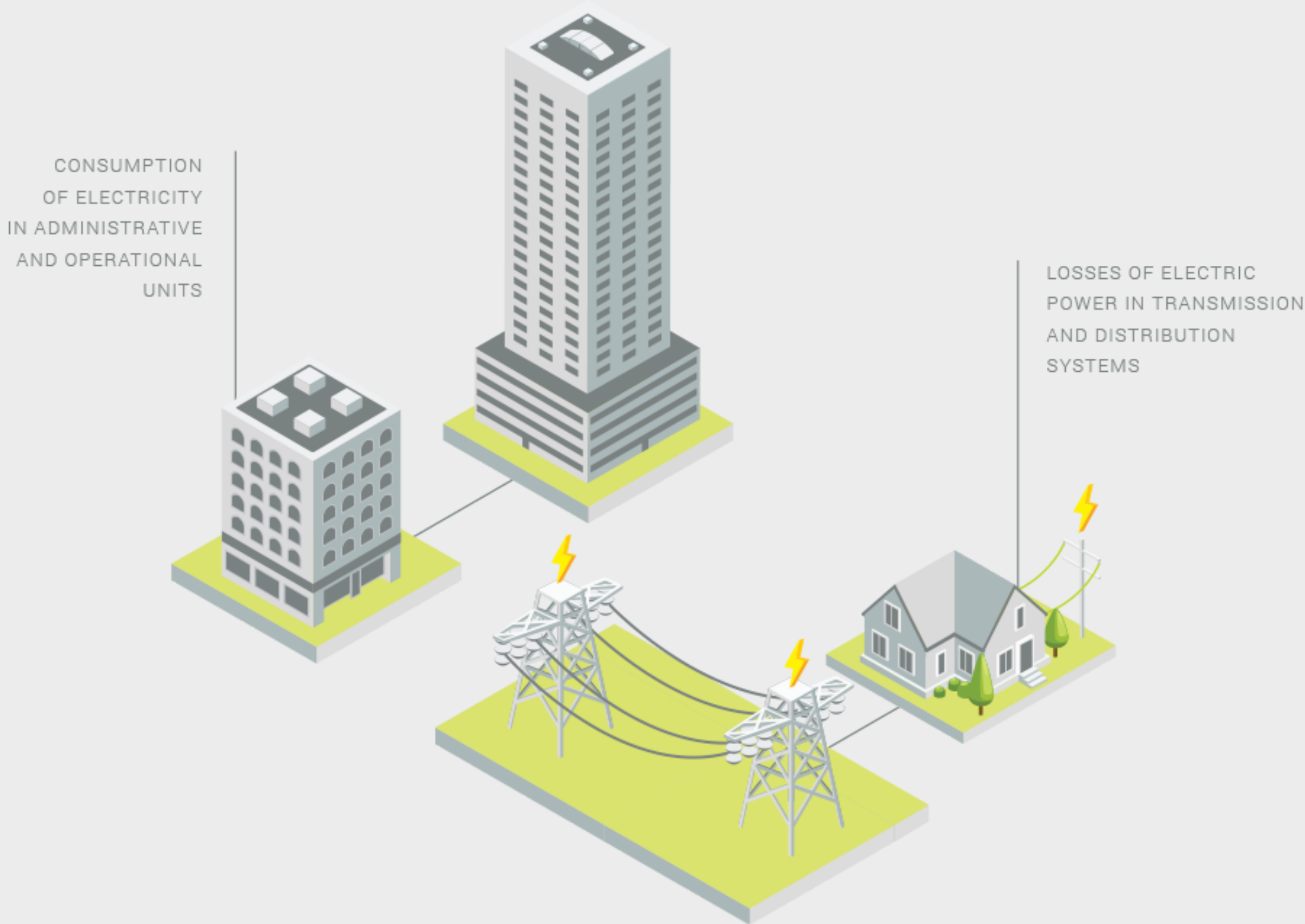


Indirect emissions (Scope 2) totaled 664,413 tCO<sub>2</sub>e, or 8.6% of the Company's total emissions. Of the Scope 2 total, 99.4% refers to emissions attributed to total electricity losses in the transmission and distribution systems. A strong contributor to the Scope 2 figures is the emission factor for the national grid (SIN factor), which was 13.5% higher than in 2016, increasing from 0.0817 tCO<sub>2</sub>e/MWh to 0.0927 tCO<sub>2</sub>e/MWh.



The figure below shows Cemig’s Scope 2 GHG emission sources:

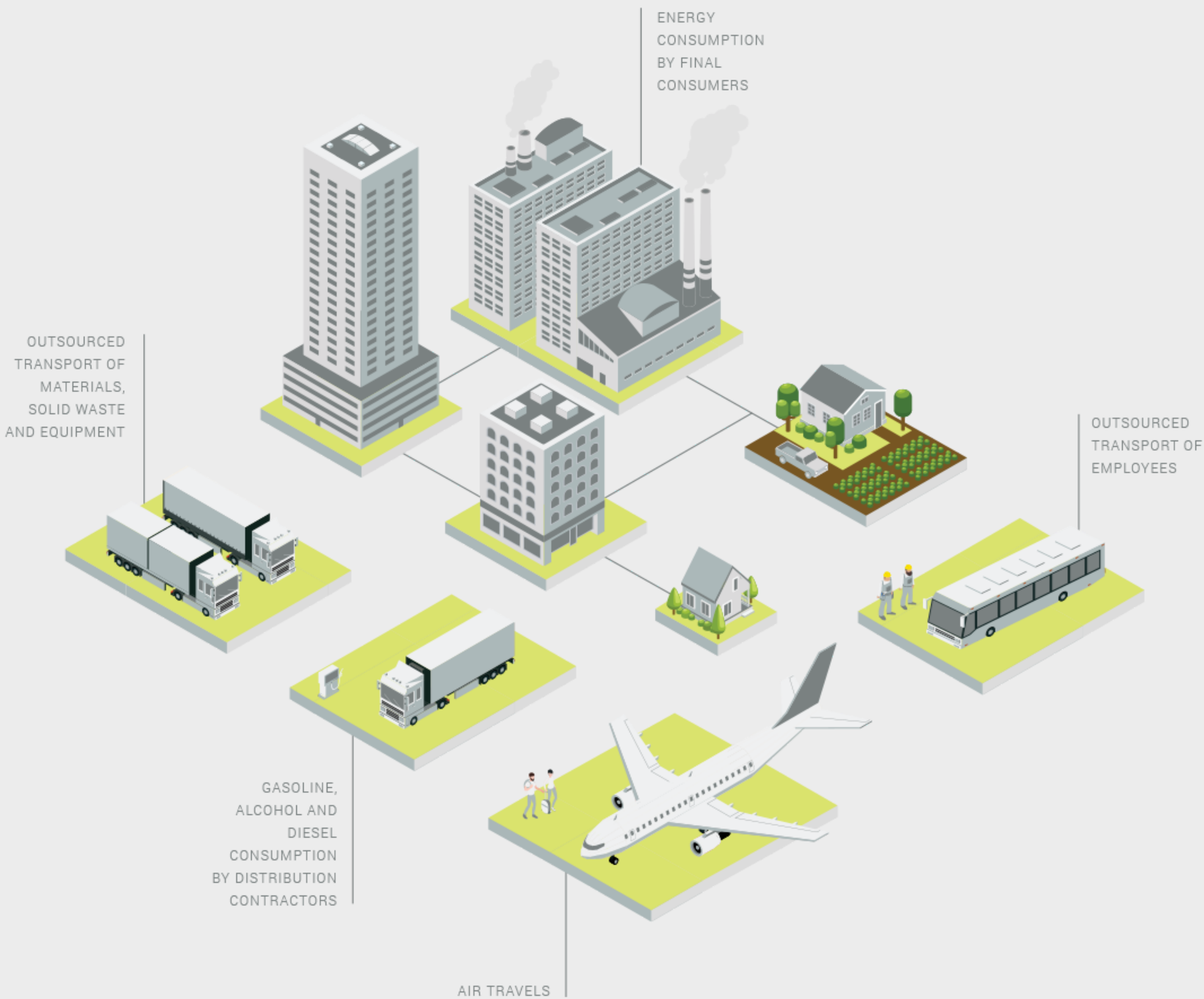
Scope 2: Emission Sources



A great majority of Cemig’s emission sources are essentially those in Scope 3, i.e. those arising from the Company’s activities but in operating sources that do not belong to the Company nor are controlled by it. The principal source of emissions calculated in Scope 3 is electricity consumption by Cemig’s final consumers, themselves. In 2017, Cemig’s total sales were 1.8% higher than in 2016, and this resulted in an increase of 15.5% in the indirect emissions, compared to 2016 - a fact that is also shown in the increase of the emission factor for the national grid used for calculation of those emissions.

The figure below shows the GHG emission sources included in Cemig’s Scope 3:

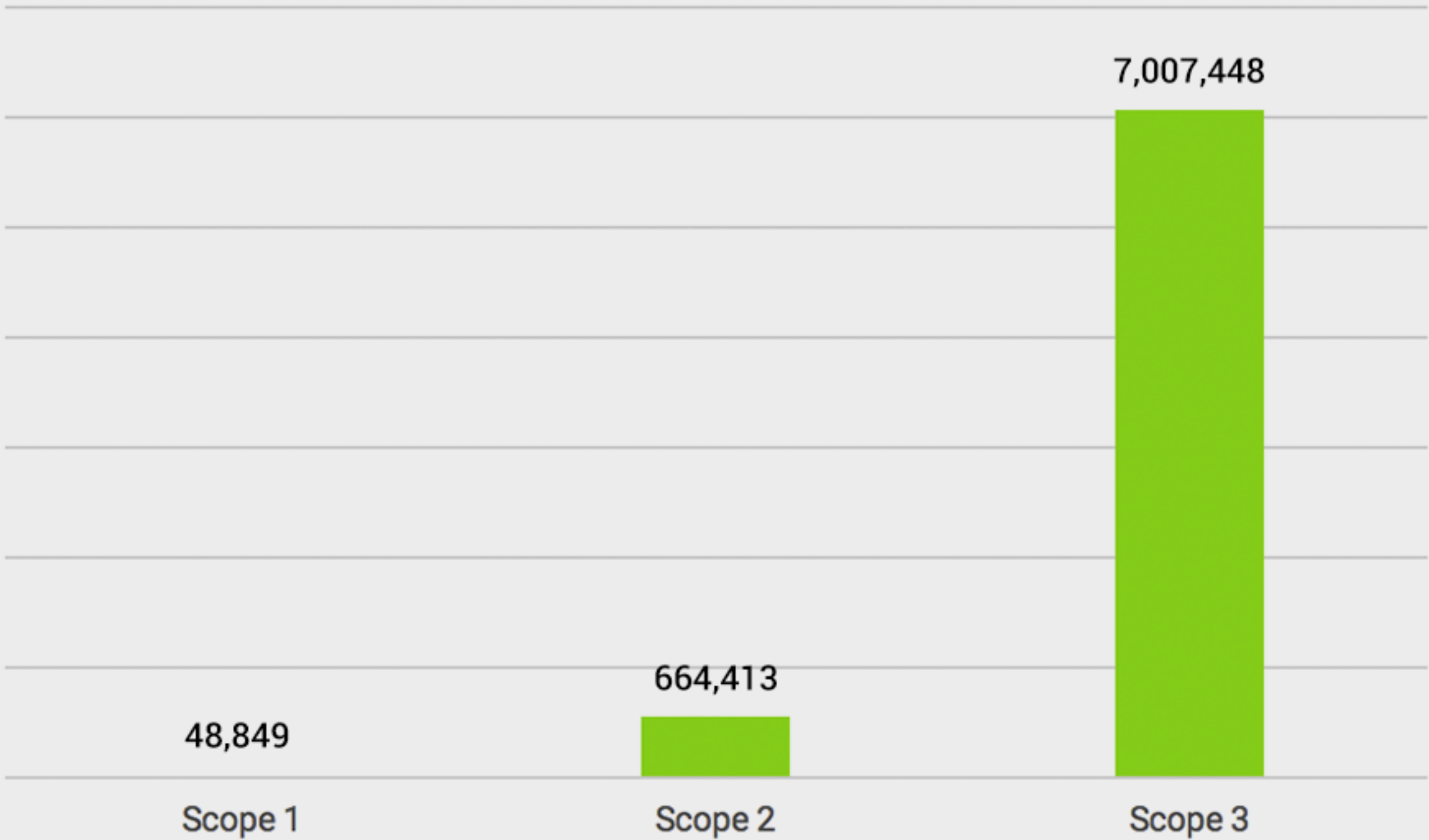
Scope 3: Emission Sources





The figure below shows the total of Cemig’s direct and indirect emissions in 2017:

Total emission by scope (tCO<sub>2</sub>e)



The emissions of sulfur dioxide (SO<sub>2</sub>) and nitrogen oxide (NO<sub>x</sub>)<sup>21</sup> come from burning of fuels by the Igarapé thermal plant, and vehicles. The 179% increase in SO2 emissions and the 493% increase in NO<sub>x</sub>, from 2016, are due to dispatching of the Igarapé thermal plant for short periods of time, and also due to environmental restraints (low volume of the Paraopeba River), which caused operation outside the best ranges of efficiency.

Year	Total emissions (t)			
	SO <sub>2</sub>	NO <sub>x</sub>	PM*	SF <sub>6</sub>
2013	962.87	176.52	87.41	0.15
2014	3,048.71	251.08	386.77	0.29
2015	635.75	32.38	89.87	0.42
2016	56.37	7.33	0.29	0.21
2017	157.38	43.49	3.43	0.21

Particulate material emissions come from the Igarapé thermal plant, and vehicles. In 2017, the Igarapé thermal plant emitted only 3.16 tons of particulate material, due to the success of the operation of its electrostatic precipitator.

SF<sub>6</sub> emissions are generated during maintenance of power transmission and distribution equipment, which use this gas as an insulator or to extinguish electric arcs. In these maintenance actions occurs the replacement of the gas that was lost by fugitive emissions - normal at a low annual rate - or by accidental leakages. When the equipment does not need the replacement, Cemig still calculates an annual rate of fugitive emissions on its installed equipment park containing SF6, rate recommended in the specialized literature.

For more details, see the Cemig Greenhouse Gas Inventory, [here](#).

<sup>21</sup> The values for SO<sub>2</sub> and NO<sub>x</sub> (gases causing acid rain) in the Total Emissions table include vehicle emissions.

\* For 2013-2016, particulate material (PM) data is from the Igarapé Thermal Plant. For the year 2017, the amount for the vehicle fleet has been added.





Aureliano Chaves Building and Júlio Soares Building, headquarters of Cemig.

# OTHER DATA

## SOCIAL REPORT

1) - Basis of calculations	2017			2016		
	Amount (R\$ '000)			Amount (R\$ '000)		
Net revenue (NR)	21,711,690			18,772,656		
Operational profit (OP)	2,642,407			1,805,118		
Gross payroll (GP)	1,627,026			1,643,253		
2) Internal social indicators	Amount	% of GP	% of NR	Amount	% of GP	% of NR
	R\$ '000			R\$ '000		
Food	90,990	5.59	0.42	97,341	5.92	0.52
Mandatory charges/costs on payroll	318,975	19.60	1.47	342,269	20.83	1.82
Private pension plan	85,178	5.24	0.39	96,994	5.90	0.52
Health	52,590	3.23	0.24	56,615	3.45	0.30
Safety and medicine in the workplace	24,870	1.53	0.11	26,119	1.59	0.14
Education	87	0.01	0.00	187	0.01	0.00
Training and professional development	21,847	1.34	0.10	23,589	1.44	0.13
Provision of or assistance for day-care centers	3,272	0.20	0.02	3,034	0.18	0.02
Profit sharing	8,281	0.51	0.04	26,480	1.61	0.14
Others	15,270	0.94	0.07	14,541	0.88	0.08
Internal social indicators – Total	621,360	38.19	2.86	687,170	41.82	3.66
3) External social indicators	Amount	% of GP	% of NR	Amount	% of GP	% of NR
	R\$ '000			R\$ '000		
Education	1,176	0.04	0.01	2,300	0.13	0.01
Culture	16,369	0.62	0.08	10,985	0.61	0.06
Health	416	0.02	0.00	-	-	-
Sport	3,313	0.13	0.02	1,222	0.07	0.01
Other donations/ subsidies / ASIN project / Sport	2,063	0.08	0.01	2,131	0.12	0.01
Total contributions to society	23,337	0.88	0.11	16,638	0.92	0.09
Taxes (excluding obligatory charges on payroll)	9,920,165	375.42	45.69	10,053,044	556.92	53.55
External social indicators – Total	9,943,502	376.30	45.80	10,069,682	557.84	53.64



4) Environmental indicators	Amount	% of GP	% of NR	Amount	% of GP	% of NR
	R\$ '000			R\$ '000		
Related to the company's operations	38,311	1.45	0.18	52,116.00	2.89	0.28
Investments in external programs/projects	-	-	-	-	-	-
Total investment in the environment	38,311	1.45	0.18	52,116.00	2.89	0.28
5) Workforce indicators	2017			2016		
Number of employees at end of period	5,864			7,119		
Number of hirings during period	27			77		
Number of outsourced employees	333			269		
Number of interns	227			277		
Employees' levels of schooling	2017			2016		
- University and university extension	1,352			1,553		
- Secondary	4,371			5,513		
- Primary	141			53		
Number of employees over 45 years old	3,027			3,779		
Number of women employed	752			939		
% of supervisory positions held by women	0			>0		
Number of African-Brazilian employees	290			340		
% of supervisory positions held by African-Brazilians	0			>0		
Number of employees with disabilities	74			192		
6) Informações Relevantes quanto ao Exercício da Cidadania Empresarial	2016			Targets for 2017		
Ratio of highest to lowest compensation	23.40			26.44		
Total number of work accidents to employees	163.00			225.00		
Who selects the company's social and environmental projects?	( ) senior management	( x ) senior management and line managers	( ) all the employees	( ) senior management	( x ) senior management and line managers	( ) all the employees
Who decides the company's work environment health and safety standards?	( ) senior management	( x ) senior management and line managers	( ) all the employees	( ) senior management	( x ) senior management and line managers	( ) all the employees
In relation to labor union freedom, the right to collective bargaining and/or internal employee representation, the company	( ) senior management	( ) senior management and line managers	( x ) all the employees	( ) senior management	( ) senior management and line managers	( x ) all the employees
The profit-sharing program covers:	( ) senior management	( ) senior management and line managers	( x ) all employees	( ) senior management	( ) senior management and line managers	( x ) all employees
In selecting suppliers, the company's standards of ethics and social and environmental responsibility:	( ) are not considered	( ) are suggested	( x ) are required	( ) will not be considered	( ) will be suggested	( x ) will be required
As to employees' participation in voluntary work programs, the company:	( ) doesn't get involved	( ) supports	( x ) organizes and encourages	( ) will not get involved	( ) will support	( x ) will organize and encourage
Total added value distributable (R\$ '000)	In 2017: 15,049,884			In 2016: 14,780,152		
Distribution of added value (DVA)	71,77% government	8,40% employees		68,02% government	9,00% employees	
	6,65% stockholders	13,11% others		3,95% stockholders	18,49% others	

# GRI INDICATORS

GRI Indicators		Subject heading / Remarks	Information verified	Impacts	
				Internal	External
G4	Strategy and analysis				
G4-1	Provide a statement from the most senior decision-maker of the organization (such as CEO, chair, or equivalent senior position) about the relevance of sustainability to the organization and the organization's strategy for addressing sustainability.	Message from Management	No	x	x
G4-2	Provide a description of key impacts, risks, and opportunities.	Risk management	Yes	x	x
	Organizational profile.				
G4-3	Report the name of the organization.	Profile	Yes	x	x
G4-4	Report the primary brands, products, and services.	Profile	Yes	x	x
G4-5	Report the location of the organization's headquarters.	Credits for this edition	Yes	x	x
G4-6	Report the number of countries where the organization operates, and names of countries where either the organization has significant operations or that are specifically relevant to the sustainability topics covered in the report.	Cemig's operations are all within the territory of Brazil; there are no operations in any other country.	Yes	x	x
G4-7	Report the nature of ownership and legal form of the organization.	Corporate governance	Yes	x	x
G4-8	Report the markets served (including geographic breakdown, sectors served, and types of customers and beneficiaries).	Supply of electricity	Yes	x	x
G4-9	Report the scale of the organization, including: Total number of operations; Net sales (for private sector organizations) or net revenues (for public sector organizations); Total capitalization broken down in terms of debt and equity (for private sector organizations); Quantity of products or services provided.	Financial results	No	x	x
EU1	Installed capacity, broken down by primary energy source and by regulatory regime.	Environmental management / Electricity	No	-	-
EU2	Net energy output broken down by primary energy source and by regulatory regime.	Environmental management / Electricity	No	x	x
EU3	Number of residential, industrial, institutional and commercial consumer accounts.	Supply of electricity	No	x	-
EU4	Length of above and underground transmission and distribution lines, by regulatory regime.	Table: Main indicators	No	x	x
EU5	Allocation of CO <sub>2</sub> emissions allowances, broken down by Carbon Trading Framework.	There was no funding through carbon credit trading.	Yes	-	-



G4-10	Report the total number of employees by employment contract and gender. Report the total number of permanent employees by employment type and gender. Report the total workforce by employees and supervised workers and by gender. Report the total workforce by region and gender. Report whether a substantial portion of the organization's work is performed by workers who are legally recognized as self-employed, or by individuals other than employees or supervised workers, including employees and supervised employees of contractors. Report any significant variations in employment numbers (such as seasonal variations in employment in the tourism or agricultural industries).	Management of People / Profile of Cemig's staff	Yes	x	x
G4-11	Report the percentage of total employees covered by collective bargaining agreements.	Management of people / Labor and union practices	Yes	x	-
G4-12	Describe the network of the organization's suppliers.	Internally, Cemig perceives its Generation, Transmission and Distribution operations to be its supplier network. On the other hand the term should be deemed to include other agents which are not part of the Cemig Group, such as suppliers of goods and services that operate downstream and upstream from the network of suppliers that Cemig primarily considers. All of these are covered in the report. See the chapter Suppliers.	No	x	x
G4-13	Report any significant changes during the reporting period regarding the organization's size, structure, ownership, or its supply chain.	There have been no significant changes during the period covered by the report.	Yes	x	x
G4-14	Report whether and how the precautionary approach or principle is addressed by the organization.	Risk management	Yes	x	x
G4-15	List externally developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or which it endorses.	About this report	Yes	x	x
G4-16	List memberships of associations (such as industry associations) and national or international advocacy organizations in which the organization: holds a position on the governance body; participates in projects or committees; provides substantive funding beyond routine membership dues; views its membership as strategic.	Cemig / Participation in associations	Yes	x	x
	Identified Material Aspects and Boundaries				
G4-17	List all entities included in the organization's consolidated financial statements or equivalent documents. Report whether any entity included in the organization's consolidated financial statements or equivalent documents is not covered by the report.	About this report  Financial results	Yes	x	x
G4-18	Explain the process for defining the report content and the Aspect Boundaries. Explain how the organization has implemented the Reporting Principles for Defining Report Content.	Limitations of the Report	Yes	x	x
G4-19	List all the material Aspects identified in the process for defining report content.	Materiality matrix	Yes	x	x

G4-20	For each material Aspect, report the Aspect Boundary within the organization, as follows:	Materiality matrix	Yes	x	x
G4-21	For each material Aspect, report the Aspect Boundary outside the organization.	Materiality matrix	Yes	x	x
G4-22	Report the effect of any restatements of information provided in previous reports, and the reasons for such restatements.	Care for fish populations / Change in the research period for the indicator 'number of fish releases' - from fish catch year to calendar year.  Reason: alignment with other information in the report.	Yes	x	-
G4-23	Report significant changes from previous reporting periods in the Scope and Aspect Boundaries.	There have been no changes in relation to previous reporting periods.	Yes	x	-
	Stakeholder Engagement				
G4-24	Provide a list of stakeholder groups engaged bythe organization.	Materiality matrix	Yes	x	-
G4-25	Report the basis for identification and selection of stakeholders with whom to engage.	Materiality matrix	Yes	x	-
G4-26	Report the organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group, and an indication of whether any of the engagement was undertaken specifically as part of the report preparation process.	Materiality matrix	Yes	x	-
G4-27	Report key topics and concerns that have been raised through stakeholder engagement, and the steps taken by the organization to respond to those key topics and concerns, including through the process of reporting them. Report the stakeholder groups that raised each of the key topics and concerns referred to.	Materiality matrix	Yes	x	x
	Report profile				
G4-28	Reporting period (e.g. fiscal or calendar year) for information provided.	About this report	Yes	-	-
G4-29	Date of most recent previous report (if any).	About this report	Yes	-	-
G4-30	Reporting cycle (such as annual, biennial).	About this report	Yes	-	-



G4-31	Provide the contact point for questions regarding the report or its contents.	Corporate information	No	-	x
G4-32	Report the ‘in accordance’ option the organization has chosen. Report the GRI Content Index for the chosen option. Report the reference to the External Assurance Report, if the report has been externally assured. GRI recommends the use of external assurance, but it is not a requirement to be ‘in accordance’ with the Guidelines.	About this report	Yes	x	x
G4-33	Report the organization’s policy and current practice with regard to seeking external assurance for the report. If not included in the assurance report accompanying the sustainability report, report the scope and basis of any external assurance provided. Report the relationship between the organization and the assurance providers. Report whether the highest governance body or senior executives are involved in seeking assurance for the organization’s sustainability report.	About this report	Yes	x	x
	Governance				
G4-34	Describe the governance structure, including the committees of the highest governance body. Identify all the bodies responsible for advising the Board in taking decisions that have economic, environmental and social impacts.	Corporate governance	No	x	x
G4-35	Report the process for delegating authority for economic, environmental and social topics from the highest governance body to senior executives and other employees.	Corporate governance / Management	No	x	-
G4-37	Report processes for consultation between stakeholders and the highest governance body on economic, environmental and social topics. If consultation is delegated to other structures, bodies or persons, describe to whom and any processes for feedback to the highest governance body.	Corporate governance / Stockholders’ meetings	No	x	x
G4-39	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).	This does not apply to Cemig's governance model.	-	-	-
G4-40	Report the nomination and selection processes for the highest governance body and its committees, and the criteria used for nominating and selecting members of the highest governance body, including: Whether and how diversity is considered; whether and how independence is considered; whether and how expertise and experience relating to economic, environmental and social topics are considered; whether and how stakeholders (including shareholders) are involved.	Corporate governance / Management	No	x	x

G4-41	Describe the processes used by the highest governance body to ensure that conflicts of interest are avoided and managed. Report whether conflicts of interest are disclosed to stakeholders, including, as a minimum: cross-board memberships (membership of other boards, persons holding seats on both the Board of Directors and the Executive Board, etc.); cross-shareholding with suppliers and other stakeholders; existence of a controlling shareholder or a Stockholders' Agreement; related party disclosures.	Corporate governance	No	x	x
G4-46	Describe the role played by the highest governance body in the analysis and efficacy of the organization for economic, environmental and social topics.	Risk management	Yes	x	x
G4-47	Report the frequency of the highest governance body's review of economic, environmental and social impacts, risks, and opportunities.	Risk management	Yes	x	-
G4-51	<p>a. Report the compensation policies applied to the highest governance body and to senior executives for the following types of compensation: Fixed salary, and variable remuneration:</p> <p>-- Remuneration based on performance -- Share-based remuneration (i.e. shares or share options) -- Bonuses -- Exercisable or deferred shares</p> <p>Joining bonus or recruiting incentive payments</p> <p>Severance payments</p> <p>Clawbacks</p> <p>Retirement benefits, including the difference between any benefits plan and rates of contributions for the highest governance body, senior executives and all other employees.</p> <p>b. Report how performance criteria in the remuneration policy relate to the highest governance body's and senior executives' economic, environmental and social objectives.</p>	Corporate governance / Management	No	x	-
	Ethics and Integrity				
G4-56	Describe the organization's values, principles, standards and norms of behavior such as codes of conduct and codes of ethics.	Ethics and Transparency	Yes	x	x
G4-57	Report the internal and external mechanisms forseeking advice on ethical and lawful behavior, and matters related to organizational integrity, such as helplines or advice lines.	Ethics and Transparency / Ombudsman's Office	Yes	x	x
G4-58	Report the internal and external mechanisms forreporting concerns about unethical or unlawful behavior, and matters related to organizational integrity, such as escalation through line management, whistleblowing mechanisms or hotlines.	Ethics and Transparency	Yes	x	x
	Management approach and performance indicators				
	Economic performance				
	Electric utilities - Sector-specific disclosures on management approach				
	Availability and reliability				



EU6	Planning to ensure short and long-term electricity availability and reliability (Information).	Investments	No	x	x
	Aspect: Demand-side management (DSM)				
EU7	Demand-side management programs including residential, commercial and industrial programs (Information).	Technology and Innovation	Yes	x	x
	Aspect: Research and Development				
EU8	Research and development activity, and expenditure aimed at providing reliable electricity and promoting sustainable development (Information).	Technology and Innovation	Yes	x	x
	Aspect: Decommissioning of plants				
EU9	Provisions for decommissioning of nuclear power plants (Information).	Not applicable	-	-	-
	Economic Performance Indicators				
	Aspect: Availability and reliability				
EU10	Planned capacity compared to projected electricity demand over the long term, broken down by energy source and regulatory regime.	Cemig's market does not have planned levels of supply, so this indicator is not applicable.	No	x	x
	Aspect: System Efficiency				
EU11	Average generation efficiency of thermal plants, by energy source and by regulatory regime.	The average efficiency of the Igarapé thermoelectric plant in 2017 was 28.7%.	Yes	x	x
EU12	Transmission and distribution losses as a percentage of total energy.	Supplying power to the market / Balance of Sources and Uses	No	x	x
	Economic performance				
	Aspect: Economic Performance				
EC1	Direct economic value generated and distributed	Financial results	No	x	x
EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change.	Climate change	Yes	x	x
EC3	Coverage of the organization's defined benefit plan obligations.	Management of people	Yes	x	-
EC4	Financial assistance received from government.	Technology and Innovation	Yes	x	x
	Aspect: Market Presence				
EC5	Ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation.	Management of people	Yes	x	-
EC6	Proportion of senior management hired from the local community at significant locations of operation.	Cemig has no specific standard for hiring local employees. As it is a mixed capital company, people can only be hired through public competition.	-	-	-
	Aspect: Indirect Economic Impacts				

EC7	Development and impact of infrastructure investments and services supported.	Concessions	No	x	x
	Aspect: Procurement Practices				
EC9	Proportion of spending on local suppliers at significant locations of operation.	Suppliers	No	-	x
	Environmental Performance				
	Environmental Performance Indicators				
	Aspect: Materials				
EN1	Materials used, itemized by weight or volume  Note about this indicator: Report in-use inventory of solid and liquid, high level and low level PCBs in equipment.	Environmental management / Materials	No	x	x
EN2	Percentage of materials used that are recycled.	Environmental management / Waste	No	x	x
	Aspect: Energy				
EN3	Energy consumption within the organization.	Environmental management / Electricity.	Yes (assured by BV independent audit)	x	-
EN5	Energy intensity	The energy intensity for the product in 2017 was 0.01070784.	No	x	x
EN6	Reduction of energy consumption.	Environmental management / Electricity.	No	x	x
EN7	Reductions in energy requirements of products and services.	Research and development	Yes	x	x
	Aspect: Water				
EN8	Total water drawn, by source.	Water resources	Yes	x	x
EN9	Water sources significantly affected by withdrawal of water.	Water resources	Yes	-	x
EN10	Percentage and total volume of water recycled and reused.	Water resources  The amount of water recycled or reused by Cemig is insignificant.	No	x	x
	Aspect: Biodiversity				
EN11	Operational units owned, leased, or managed in or adjacent to protected areas and areas of high biodiversity index outside protected areas.	Biodiversity / Handling of vegetation	Yes	x	x
EN12	Description of significant impacts of activities, products and services on biodiversity in protected areas and area of high biodiversity index outside protected areas.	Biodiversity / Handling of vegetation	Yes	x	x
EU13	Biodiversity of offset habitats compared to the biodiversity of the affected areas.	Biodiversity / Handling of vegetation	Yes	x	x
EN13	Habitats protected or restored.	Biodiversity / Handling of vegetation	Yes	x	x
	Aspect: Emissions				



EN15	Direct emissions of greenhouse gases (GHGs) (Scope 1)	Climate change / Emissions	Yes (assured by BV independent audit)	x	x
	Notes about the indicator: Report CO <sub>2</sub> emissions per MWh by country or regulatory system, for: - net generation from total generating capacity; - net generation from total fossil fuel generation; and - estimate for net delivery to end users. Include emissions from own generation, as well as gross purchased energy, including line losses				
EN16	Indirect emissions of greenhouse gases (GHGs) arising from acquisition of electricity (Scope 2)	Climate change / Emissions	Yes (assured by BV independent audit)	x	x
	Notes about the indicator: Report CO <sub>2</sub> emissions per MWh by country or regulatory system, for: - net generation from total generating capacity; - net generation from total fossil fuel generation; and - estimate for net delivery to end users. Include emissions from own generation, as well as gross purchased energy, including line losses.				
EN17	Other indirect greenhouse gas (GHG) emissions (Scope 3).	Climate change / Emissions	Yes (assured by BV independent audit)	x	x
EN18	Greenhouse gas (GHG) emissions intensity.	Climate change / Emissions	Yes (assured by BV independent audit)	x	x
EN19	Reduction of greenhouse gas (GHG) emissions.	Climate change / Emissions	Yes	x	x
EN20	Emissions of ozone-depleting substances (ODS).	Climate change / Emissions	Yes (assured by BV independent audit)	x	x
EN21	Emissions of NOx, SOx and other significant atmospheric emissions	Climate change / Emissions	Yes (assured by BV independent audit)	x	x
	Comment on the indicator: Report emissions per net MWh generated.				
	Aspect: Effluents and Waste				
EN22	Total water discharge by quality and destination	Water resources / Water consumption and generation of effluents	Yes	-	x
	Comment on the indicator: include thermal discharge.				
EN23	Total weight of wastes by type and disposal method	Environmental management / Waste	No	x	x
	Comment on the indicator: Include wastes contaminated with PCB; report nuclear wastes, based on the IAEA protocol definitions; report the volume and activity of nuclear fuel sent for processing and reprocessing per year. Also report radioactive wastes produced per net production of nuclear output, in MWh/year. - Report (in terms of volume and activity) low/medium level radiation wastes and high-level radiation wastes separately based on the IAEA classification of radioactive wastes. This should also include waste produced from reprocessing activities, where data is available.				
EN24	Total number and volume of significant spills	Environmental management / Waste	No	x	x
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.	Cemig does not engage in international transport of waste.	-	-	-
EN26	Identity, size, protected status, and biodiversityvalue of bodies of water and related habitats significantly affected by the reporting organization's discharges of water and runoff.	Water resources	Yes	x	x

	Aspect: Products and Services				
EN27	Extent of mitigation of environmental impacts of products and services.	Cemig believes that the impacts are not significant. The relevant existing projects are related to biodiversity and have been reported in the indicator EN12.	-	-	x
EN28	Report the percentage of reclaimed products and their packaging materials for each product category	The Company's main product is electricity, which due to its nature does not require packaging.	-	-	-
	Aspect: Compliance				
EN29	Monetary value of significant fines and total number of nonmonetary sanctions for non-compliance with environmental laws and regulations.	Environmental management / Environmental compliance	No	x	-
	Aspect: Transportation				
EN30	Significant environmental impacts of transporting products and other goods and materials for the organization's operations, and transporting employees.	Environmental management / Electricity Climate change / Emissions	Yes (assured by BV independent audit)	x	x
	Aspect: Overall				
EN31	Total environmental protection expenditures and investments by type	Environmental management / Funds invested in the environment.	No	x	-
	Aspect: Supplier Environmental Assessment				
EN32	Percentage of new suppliers that were screenedusing environmental criteria.	Suppliers	Yes	-	x
EN33	Significant actual and potential negative environmental impacts in the supply chain and actions taken.	Suppliers	Yes	-	x
	Aspect: Environmental Grievance Mechanisms				
EN34	Number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanisms	Biodiversity / Handling of vegetation.	Yes	x	x
	Social performance				
	Performance indicators related to labor practices and decent work				
	Aspect: Employment				
EU14	Programs and processes for ensuring supply of qualified staff.				
EU15	Percentage of employees eligible to retire in the next 5 and 10 years, itemized by job category and by region.	Management of people / Compensation, benefits and preparation for retirement	Yes	x	-
EU16	Policies and requirements regarding health and safety of employees and employees of contractors and subcontractors.	Management of people / Occupational safety, health and well-being	No	x	x



LA1	<p>Total number and rates of new employee hires and employee turnover by age group, gender, and region</p> <p>Comment on the indicator: For the employees leaving employment during the reporting period, provide average length of tenure itemized by gender and age group.</p>	Management of People / Profile of Cemig's staff	Yes	x	-
LA2	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation.	Management of people / Compensation, benefits and preparation for retirement	Yes	x	-
LA3	Return to work and retention rates after parental leave, by gender.	Management of people / Compensation, benefits and preparation for retirement	Yes	x	-
EU18	Percentage of contractor and subcontractor employees that have undergone relevant health and safety training.	Management of people / Organizational learning	Yes	x	-
	Aspect: Labor Relations				
LA4	Minimum notice period(s) regarding significant operational changes, including whether specified in collective agreements.	Management of people / Labor and union practices	Yes	x	-
	Aspect: Workplace Health and Safety				
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.	Management of people / Occupational safety, health and well-being	Yes	x	-
LA6	Types and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender.	Management of people / Results of indicators	Yes	x	-
LA7	Workers with high incidence or high risk of diseases related to their occupation.	According to Occupational Medicine, Cemig's employees are subject predominantly to the risk of accidents and in some activities there are risks of occupational diseases, which the Health and Safety units work to minimize.	No	x	-
LA8	Health and safety topics covered in formal agreements with trade unions.	Management of people / Labor and union practices	Yes	x	-
	Aspect: Training and education				
LA9	Average hours of training per year per employee, by gender and by employee category.	Management of people / Organizational learning	Yes	x	-
LA10	Programs for skills management and lifelong learning that support the continued employability of employees in a period of preparation for retirement.	Management of people / Compensation, benefits and preparation for retirement	Yes	x	-
LA11	Percentage of employees receiving regular performance and career development reviews, itemized by gender and by employee category.	Management of people / Performance management	Yes	x	-
	Aspect: Diversity and equality of opportunity				
LA12	Composition of governance bodies and itemization of employees per work category according to gender, age group, minority group membership, and other indicators of diversity.	Management of People / Profile of Cemig's staff	Yes	x	-

	Aspect: Equal Remuneration for Men and Women				
LA13	Ratio of basic salary and compensation between women and men, itemized by employee category and by significant locations of operation.	Management of people / Diversity, equality of opportunity, and human rights	Yes	x	-
	Aspect: Evaluation of Suppliers' Labor Practices				
LA14	Percentage of new suppliers that were screenedusing labor practices criteria.	Suppliers	Yes	x	x
LA15	Significant actual and potential negative impacts for labor practices in the supply chain, and actions taken.	Suppliers / Supplier chain management	Yes	x	x
	Human Rights Performance Indicators				
	Aspect: Investments				
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.	Cemig / Ethical conduct	Yes	x	-
	Aspect: Non-discrimination				
HR3	Total number of incidents of discrimination and corrective actions taken.	Management of people / Diversity, equality of opportunity, and human rights	Yes	x	-
	Aspect: Freedom of Association and Collective Bargaining				
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.	Suppliers / Supplier chain management	Yes	x	x
	Aspect: Child Labor				
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.	Suppliers / Supplier chain management	Yes	x	x
	Aspect: Forced or Compulsory Labor				
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.	Suppliers / Supplier chain management	Yes	x	x
	Aspect: Security Practices				
HR7	Percentage of security personnel trained in the organization's human rights policies or procedures that are relevant to operations.	100% of the 144 security guards receive training in subjects linked to occupational health and safety and human rights, during their training and their recycling courses	No	x	-
	Aspect: Human Rights Evaluation of Suppliers				
HR10	Percentage of new suppliers that were screenedusing human rights criteria.	Suppliers / Supplier chain management	Yes	x	x
HR11	Significant actual and potential negative human rights impacts in the supply chain and actions taken.	Suppliers / Supplier chain management	Yes	x	x
	Aspect: Human Rights Grievance Mechanisms				
HR12	Number of grievances about human rights impacts filed, addressed, and resolved through formal grievance mechanisms	Ombudsman's Office	No	x	x
	Company's Social Performance Indicators - General Public				
	Aspect: Emergency and disaster prevention and preparedness				



EU21	Contingency planning measures, disaster/emergency management plan and training programs, and recovery/restoration plans.	Water resources / Dam safety	Yes	x	x
	Aspect: Community				
S01	Percentage of operations with implemented community engagement, impact assessment, and local development programs.	Community / Relationship with the community	Yes	x	x
EU22	Number of people physically or economically displaced and compensation, broken down by type of project.	Community / Territory management	Yes	x	x
	Aspect: Combating corruption				
S03	Total number and percentage of operations assessed for risks related to corruption and the significant risks identified.	Cemig / Ethical conduct	Yes	x	x
S04	Communication and training on anti-corruption policies and procedures.	Cemig / Ethical conduct	Yes	x	x
S05	Confirmed incidents of corruption and actions taken.	Cemig / Ethical conduct	Yes	x	x
	Aspect: Public Policy				
S06	Total value of political contributions by country and recipient/beneficiary.	Being a public-sector/private sector ('mixed stockholding') company, Cemig cannot and does not make financial contributions to politicians, parties or related institutions.	No	-	-
	Aspect: Unfair Competition				
S07	Total number of legal actions for anti-competitive behavior, antitrust, and monopoly practices and their outcomes.	The Company was not prosecuted,nor were any administrative proceedings brought against it, for violations of the competitive order, whether for neither anti-trust, monopoly or unfair competition practices. All of Cemig's acquisitions, prior to taking effect, must be approved by the Administrative Council for Economic Defense (CADE), an authority linked to the Brazilian Ministry of Justice.	No	x	-
	Product liability indicators				
	Aspect: Client Health and Safety				
PR1	Percentage of significant product and service categories for which health and safety impacts are assessed with a view to improvement.	Clients and consumers / Safe use of electricity	No	x	-
PR2	Total number of incidents of noncompliance with voluntary regulations and codes relating to the health and safety impacts of products and services during their life cycle, itemized by type of outcome.	There were no non-compliance cases related to this aspect.	No	x	x
EU25	Number of injuries and fatalities to the public involving company assets including legal judgments, settlements and pending legal cases of diseases.	Clients and consumers / Safe use of electricity	Yes	x	x

	Aspect: Labeling of Products and Services				
PR3	Type of product and service information required by the organization's procedures for product and service information and labeling, and percentage of significant products and service categories subject to such information requirements.	Clients and consumers / Safe use of electricity	No	-	x
PR4	Total number of incidents of noncompliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes.	Clients and consumers / Safe use of electricity	Yes	-	x
PR5	Results of surveys measuring customer satisfaction.	Clients and consumers / Safe use of electricity	Yes	x	x
	Aspect: Marketing Communications				
PR6	Sale of banned or disputed products.	Not applicable.	-	-	-
PR7	Total number of cases of noncompliance with voluntary regulations and codes in relation to marketing communications, including advertising, promotion, and sponsorship, by type of outcome.	Clients and consumers / Safe use of electricity	Yes	x	x
	Aspect: Client Privacy				
PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.	Clients and consumers / Information Security	No	x	x
	Aspect: Compliance				
PR9	Monetary value of significant fines applied for noncompliance with laws and regulations concerning the provision and use of products and services.	Aneel issued seven notices of infringement to Cemig in 2016, generating claims for fines totaling R\$ 24.29 million. Cemig carries out continuous monitoring, with annual targets for reduction of fines received, through specific internal processes and controls, which are focused directly on an effort to reduce the initial amounts levied. In 2016, administrative level decision was given on seven claimed fines, related to two infringement notices issued by Aneel in 2014, two in 2015, and a further three in 2016. The value of these seven claims, for 2016, based on the decisions of the previous years, was R\$ 23.3 million. The decisions of that year resulted in reduction of their total amount to R\$ 12.47 million - equivalent to a reduction of 46.5% in the initial amount applied. This outcome, associated with the number of fines reduced, resulted in a Regulatory Fines Reduction Index ('IRMR') of 73.01% - higher than the target of 40.95% that had been set for 2016.The target is set to take account of the accumulated effective outcome of the indicator in the last five years.	No	x	-



	Aspect: Compliance				
EU26	Percentage of the population unserved in licensed distribution or service areas.	Clients and consumers / Client inclusion initiatives	Yes	x	x
EU27	Number of residential disconnections for nonpayment, itemized by duration of disconnection and by regulatory system.	Clients and consumers / Default	No	x	x
EU28	Power outage frequency.	Electricity quality	Yes	x	x
EU29	Average power outage duration.	Electricity quality	Yes	x	x
EU30	Average plant availability factor by energy source and by regulatory regime.	Wind - Parajuru: 69.18%; Morgado:70.09%; Volta do Rio: 62.15% Thermal plants: 66.86% Hydroelectric: 92.86%	Yes	x	x

# PRINCIPLES OF THE GLOBAL COMPACT

Principles of the Global Compact
Human Rights
Principle 1 : Support and respect the protection of human rights
Principle 2: Prevent violations of human rights
Labor
Principle 3:Uphold freedom of association at work
Principle 4: Eliminate forced labor
Principle 5:Eliminate child labor
Principle 6:Eliminate discrimination in the work environment
Environment
Principle 7:Support a precautionary approach to environmental challenges
Principle 8:Promote greater environmental responsibility
Principle 9:Encourage environmentally friendly technologies
Anti-corruption
Principle 10: Work against corruption in all its forms, including extortion and bribery

Sustainable Development Goals		Chapter
SDG1	No poverty	Corporate citizenship and philanthropy
SDG2	Zero hunger	Energy conservation and efficiency
SDG3	Good health and wellbeing	Corporate citizenship and philanthropy / Energy conservation and efficiency / Occupational safety, health and well-being
SDG4	Quality education	Corporate citizenship and philanthropy / Organizational learning
SDG5	Gender equality	Diversity, equality of opportunity, and human rights
SDG6	Clean water and sanitation	Water resources
SDG7	Affordable and clean energy	Access to electricity
SDG8	Decent work and economic growth	Management of people
SDG9	Industry, innovation and infrastructure	Concessions and investments / Technology and Innovation
SDG10	Reduced inequalities	Diversity, equality of opportunity, and human rights
SDG11	Sustainable citiesand communities	Access to electricity
SDG12	Responsible consumption and production	Waste
SDG13	Climate action	Climate change
SDG14	Marine life	Biodiversity
SDG15	Life on land	Biodiversity
SDG16	Peace, justice and strong institutions	Ethical values and anti-corruption practices
SDG17	Partnerships for the goals	Participation in associations

SUSTAINABLE DEVELOPMENT GOALS







## ASSURANCE STATEMENT

### **STATEMENT BY SGS ICS CERTIFICADORA LTDA. (SGS) REGARDING THE SUSTAINABILITY ACTIVITIES PROVIDED IN “SUSTAINABILITY REPORT 2017” GIVEN TO CEMIG.**

#### **ASSURANCE NATURE AND SCOPE**

SGS was hired by CEMIG to render independent assurance of its Sustainability Report 2017. Based on assurance methodology of SGS Sustainability report, the certification scope includes the text and data related to GRI G4 standard guidelines for sustainability reporting, including the indicators.

The responsibility for information of “SUSTAINABILITY REPORT 2017” and its presentation lies on board and management of CEMIG. SGS does not take part of presentation in any material, including the said report. We are responsible for giving our opinion of the text, data, charts and statement within the certification scope, detailing the intention of informing the stakeholders of CEMIG.

The SGS group has developed a set of Assurance protocols for communicating the sustainability based on the best practices provided in *GRI G4 Sustainability Reporting Standards* guide assurance standard - ISAE 3000. These protocols give different options of assurance level depending on context and capacity of applicant organization, which is CEMIG.

This report was assured through our protocol for assessing the content legitimacy and its alignment with aspects of requirements of *GRI G4 Guidelines for Sustainability Reporting*, according to the subject matters identified by CEMIG, through the process detailed in the said report. Furthermore, the GRI G4 Electric Utilities was also consulted. Based on such context, “THE SUSTAINABILITY REPORT 2017” is deemed as Core Option.

The assurance process has comprised (i) indicator review, information and data pertinent to preliminary report of sustainability report, (ii) interview with key personnel both to understand the report data and to understand the management process connected with the subject matters and (iii) review of the complementary documentation sent by CEMIG to SGS. The CEMIG’s accounting information provided and/or detailed in SUSTAINABILITY REPORT 2017” was not assessed as integrating part of this assurance process.

#### **INDEPENDENCE AND COMPETENCE STATEMENT**

The SGS group is a worldwide leader in inspections, analysis and verifications which operates in more than 140 countries rendering services that includes management system certification, audits and training on quality, environment, social and ethic areas, as well as assurance of sustainability reports and verification of greenhouse gases. SGS reinforce its Independence from CEMIG becoming cleared from any conflict of interest against the organization, its subsidiaries and stakeholders.

The assurance team was nominated based on knowledge, expertise and skills for this service and was composed of:

- Lead Auditor on Assurance of Sustainability Report, Lead Assessor of Greenhouse Gases (GHG), Lead Auditor on Socioenvironmental Programs, Lead Auditor on ISO26001, Lead Auditor on Ecuador Principles.
- Auditor on Assurance of Sustainability Report, Lead Assessor of Greenhouse Gases (GHG), lead auditor on socioenvironmental program, Lead Auditor for Environmental, Quality, Energy and Sustainability Management System.
- Auditor on Sustainability Report Assurance, Greenhouse Gas (GEE) lead Auditor and Climate Change Programs.

#### **ASSURANCE OPINION**

A broad assurance was applied for and the service rendered was sufficient and suited to a robust assurance. Regarding the methodology presented, process and data provided by CEMIG, we attest the information and data provided in the “SUSTAINABILITY REPORT 2017” is reliable and a truthful and well-balanced of the sustainable activities performed by CEMIG in 2017 fiscal year. The assurance team has the opinion that the report can be consulted by CEMIG stakeholders as part of their assessing process of company. The organization has elected the core assurance level based on their needs.

In our opinion, based on what was found by company in Belo Horizonte and on material provided by CEMIG, the report content meets the GRI G4 requirements, including those from Sectorial appendix for *Electric Utilities*.



## ASSURANCE STATEMENT

### REMARKS, FINDINGS AND ASSURANCE CONCLUSION

The CEMIG "SUSTAINABILITY REPORT 2017" is aligned with GRI G4 Guidelines for Sustainability Reports, Core Option. It is also highlighted the key aspects and its limits were properly set according to Reporting Principles as indicated over the report and/or reference list.

Regarding the contribution to improvement of development of future sustainability report and a higher effectiveness by the assurance process, we recommend to CEMIG the following:

1. Despite of having an exclusive report for sustainability, which is not the main way to disclose its sustainable practices to its stakeholders. We understand the best way is not to use the report as information source of sustainability, which should be handled with each stakeholder depending on subject matter related to them and on communication channels that the company has with them.
2. To develop a continuous process for this matter and to prevent to perform this activities in specific periods of the year. The improvements suggest the subject matters shall be taken from the interface process between company and stakeholder that that has been already in place and performed over the year. To do so and generate more effectiveness and less cost to CEMIG, we recommend encouraging the interface points between company and its audience that take advantage of the aspects whenever they have an external relation and give to company relevant information in return.
3. To offer a better understanding of importance of GRI indicator management. During the interviews with CEMIG teams, SGS has found a slight unawareness of the reasons to assess the indicators, as a result a lot of interviewees considers the process an additional attribution to their activities. We understand that, even with the training provided by company, this awareness training shall be reinforced.

Finally, SGS congratulates CEMIG for performing the assurance of its report, for historic commitment to sustainability and wishes the significant progress are kept as the company has been reaching over the past years.

**Executed by and on behalf of SGS**

**Business Manager - Sustainability**  
**Lead Auditor on Sustainability Report**  
**SGS ICS Certificadora Ltda.**

**Marcelo Abrantes Linguitte**  
**Lead Auditor on Sustainability Report**  
**SGS ICS Certificadora Ltda.**

**April 11, 2018**  
**www.sgs.com**



## CREDITS FOR THIS EDITION

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G4-5 | G4-31

### Editing and coordination

Cemig Corporate Communication Management  
Cemig Investor Relations Management  
Cemig Corporate Sustainability Unit

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### Graphic Design

RC Comunicação

### Consulting for Planning, Data Collection, Analysis of Indicators and Drafting of the Report



Keyassociados Consultoria e Treinamento Ltda, Belo Horizonte - MG unit  
[www.keyassociados.com.br](http://www.keyassociados.com.br)

### Photographs

Euler Junior/Comunicação Empresarial/Cemig

### Translation

Stephen B Fry - Translation/editing: [work@miracleread.com](mailto:work@miracleread.com)

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### Corporate information

#### **Companhia Energética de Minas Gerais – Cemig**

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(phone numbers of Relationship with Consumers Department, valid only for calls from Brazil)  
[www.cemig.com.br/en-us/Pages/default.aspx](http://www.cemig.com.br/en-us/Pages/default.aspx)

#### **Cemig Geração e Transmissão S.A.**

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#### **Custodian Bank**

Banco Itaú S.A.

#### **Depository Bank for ADRs**

Citibank Shareholder Services

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