
CDP Climate Change

2017

Companhia
Energética de
Minas Gerais



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Introduction

CC0.1 Introduction

Founded in 1952 by the governor of Minas Gerais, Juscelino Kubitschek de Oliveira, the Companhia Energética de Minas Gerais (Cemig) operates in the areas of generation, transmission, trading and distribution of electricity, energy solutions (Efficientia S.A.) and distribution of natural gas (Gasmig). The group consists of the holding, Companhia Energética de Minas Gerais (Cemig), the wholly-owned subsidiaries Cemig Geração e Transmissão S.A. (Cemig GT) and Cemig Distribuição S.A. (Cemig D), totaling 234 Companies, 18 Consortia and 2 FIPs (Investment Funds in Shares), resulting in assets present in 23 Brazilian states (including the Federal District). Since its foundation, the Company has assumed the role of bringing the collective welfare to the regions where it operates in an innovative and sustainable way. This determination led to its position as the largest power distributor in lines extension and networks, and one of the largest power generation and power transmission Companies in the the country. Cemig also has operations in exploration and distribution of natural gas (Gasmig) and data transmission (Cemig Telecom). Cemig holds 26.06% direct and 17.26% indirect shares in Light S.A., an energy distributor working in 31 municipalities in the State of Rio de Janeiro, covering a region with more than 11 million people. It also has a 31.54% stake in the transmission company Transmissora Aliança de Energia Elétrica S.A. (Taesa), which gives it control of this company and 34.15% of Renova Energia S.A.

Cemig is a publicly traded company controlled by the Government of the State of Minas Gerais (51%) and its shares are traded in São Paulo, at BM&FBovespa SA in New York, at New York Stock Exchange (NYSE) and in Madrid, on the Latin American Stock Market (Latibex). Consolidated net operating revenue of the Company reached R\$ 18.77 billion in 2016, based on a matrix, which main source of energy are renewable resources.

Cemig's generating park has an installed capacity of 7,862 MW, 97.52% of which refers to hydraulic generation, 1.84% to thermal generation (1.67% to fuel oil and 0.17% to residual gas of process), 0.62%, to wind generation and 0.02%, to solar generation. The Company has 8,341 km of transmission lines and 16,442 km of sub transmission lines. In the electricity distribution area, it is responsible for providing services to approximately 8.3 million people in 774 municipalities of Minas Gerais and the management of the largest electricity distribution network in Latin America, with over 515,000 kilometers long. In late 2016, Cemig had 7,119 direct employees.

For its commitment to principles of social and environmental responsibility, its economic and financial strength and technical excellence, the Company is internationally recognized as a reference in sustainability in its sector and is positioned as one of the main consolidation vectors of the Brazilian electricity industry. Cemig compose the Dow Jones Sustainability Index (DJSI World) for 17 years, since its institution. It also participates, in the 12th consecutive year, in the

Corporate Sustainability Index (ISE) of BM&FBovespa, and was selected by the 7th time to compose the Carbon Efficient Index (ICO2), created in 2010 by BM&FBovespa and BNDES.

In 2016, Cemig was recognized as one of the ten Brazilian companies with the best climate change practices in Latin America. This is the fifth consecutive year that CDP rewards the Company. The selection took into account the level of detail of the responses to criteria such as risk management, commitment to mitigation and initiatives to reduce greenhouse gas emissions. The expressive result obtained by the Company, which reached the A- concept in the 2016 edition, shows the Company's commitment to the capital markets and to society's positioning in the face of climate change.

MISSION

"Acting in the energy sector with profitability, quality and social responsibility."

VISION

"Consolidate, in this decade, as the largest domestic electric industry group in market value, with a presence in gas, a world leader in sustainability, admired by the client and recognized by the strength and performance."

CC0.2 Reporting Year

01/01/2016 to 12/31/2016.

CC0.3 Country list configuration

Brazil.

CC0.4 Currency selection

BRL (R\$) - Reais.

CC0.6 Modules

Module of electric utilities.

Management

CC1. Governance

CC1.1 Where is the highest level of direct responsibility for climate change within your organization?

Board or individual/sub-set of the Board or other committee appointed by the Board.

If “Board or individual/sub-set of the Board or other committee appointed by the Board”; “Senior Manager/Officer”; or, “Other Manager/Officer”:

CC1.1a Please identify the position of the individual or name of the committee with this responsibility.

The person who is in the highest level of direct responsibility for the issue of climate change in Cemig is the Deputy Chief Executive Officer, who reports directly to the Presidency of the Company, and the Presidency is the highest level of the Executive Board, which in turn reports directly to the Board of Directors.

Cemig's management is composed of the Board of Directors and the Executive Board. The members of the Board of Directors, elected by the Shareholders' Meeting, elect its Chief Executive Officer, the Deputy Chief Executive Officer and appoint the Executive Board. The Executive Board, structure in which the Deputy Chief Executive Officer is located, is considered a group belonging to the Company's management. The functional attributions of the Deputy Chief Executive Officer, defined and approved by the Board of Directors, include: i) replacing the Chief Executive Officer in their absences, licenses, temporary impediments, resignation or vacancy; ii) promote the improvement of the Company's social responsibility and sustainability policies; iii) define policies and guidelines for the environment, technological development, energy alternatives and technical standardization; iv) coordinate Cemig's strategy of action in relation to social responsibility, the environment, the technological process and the strategic management of technology; v) coordinate the implementation and maintenance of quality systems; vi) promote the implementation of programs aimed at the technological development of the Company; and vii) monitor the implementation of the plans for compliance with environmental, technological and quality improvement guidelines.

CC1.2 Do you provide incentives for the management of climate change issues, including the attainment of targets?

Yes.

If yes:

CC1.2a Please provide further details on the incentives provided for the management of climate change issues.

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
Board / Executive Board	Monetary reward	Other: Index of Sustainability related to climate change	Indicator: Cemig's note on the Dow Jones Sustainability Index. This index assesses issues related to climate change, among other issues related to sustainability. The variable compensation of the Deputy Chief Executive Officer, which is the second position of the Executive Board, belonging to the Company's Management, and is linked to the note obtained by Cemig in the Dow Jones Sustainability Index.
Director on Board	Monetary reward	Efficiency target	Indicator: Energy loss index in the electrical system. Energy losses in the electrical system account for 99.4% of Cemig's Scope 2 emissions. In order to make measurable the objective of reducing these losses, in other words, of Scope 2 emissions, the Total Distribution Loss Index (IPTD) was implemented, with multiannual targets validated annually and monitored monthly. This loss index is linked to the variable remuneration of the Distribution and Marketing Director and the Superintendence of Revenue Protection team. It is noteworthy that it is not possible to set a target in terms of CO ₂ emissions, since the emission factor of the interconnected system varies annually and, for this reason, the target is defined in MWh.
Corporate Executive Team	Monetary reward	Other: Sustainability Index related to climate change	Indicator: Cemig's participation in the Carbon Efficient Index (ICO2) portfolio. Developed by BM&FBovespa and BNDES, ICO2 is an indicator based on the IBrX-50 portfolio, which takes into account, in the weighting of the participating actions, the ratio between gross revenue and Greenhouse Gas Emissions (GHG) of the Companies, thus evaluating the efficiency in GHG emissions. The variable remuneration of the team subordinated to the Deputy Chief Executive Officer is linked to Cemig's participation in ICO2.
Corporate Executive Team	Monetary reward	Other: Sustainability Index related to climate change	Indicator: Cemig's note on the environmental dimension of Dow Jones Sustainability Index. This index assesses issues related to climate change, among other issues related to sustainability. This team is also responsible for achieving Cemig's sustainability goals, with issues related to climate change being directly linked to these goals. The variable compensation of the subordinate team to the Deputy Chief Executive Officer is linked to the note obtained by Cemig in the environmental dimension of the Dow Jones Sustainability Index.

CC2. Strategy

CC2.1 Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities.

Integrated into multi-disciplinary company-wide risk management processes.

If "Integrated into multi-disciplinary company-wide risk management processes" or "A specific climate change risk management process" is selected, answer questions CC2.1a - 2.1c:

CC2.1a Please provide further details on your risk management procedures with regard to climate change risks and opportunities.

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
Six-monthly or more frequently	Board or individual/sub-set of the Board or committee appointed by the Board	Brazil	> 6 years	<p>Cemig has a centralized risk and opportunity management program that identifies strategic and process/operational risks, as well as opportunities to provide information to the senior management to make decisions regarding the risks and opportunities of greater relevance, including climate change.</p> <p>This program consists of a tool integrated to multidisciplinary processes, which allows the mapping and evaluation of both risks and strategic opportunities and process/operational risks.</p> <p>Strategic risks are related to the Company's objectives and vision, or strategic decisions that risk not achieving the planned success.</p> <p>Process/operational risks arise in the exercise of business functions, being associated with people, systems and processes.</p> <p>The opportunities identified are focused on renewable energy and energy efficiency businesses.</p> <p>Regarding the risks and opportunities related to climate change, these are considered strategic and are identified and monitored by the process described above.</p>

CC2.1b Please describe how your risk and opportunity identification processes are applied at both company and asset level.

The process of identifying risks/opportunities is continuously carried out at the Company, since updating the information in the management tool used by Cemig and monitoring and evaluating the controls and action plans are scheduled tasks to be performed by the managers, making all agents involved in risk management have certain roles and responsibilities. The approval of the information raised is done at the Board level.

The system enables that a risk/opportunity managed in a process level has a direct link with a risk that is being assessed at the strategic level.

In addition, there is a flow performed by an independent area to periodically evaluate the controls in order to audit the effectiveness of the process.

In a new update of the Company's risk management policy, in 2016 a holding bias was given to the document, which now guides not only the companies Cemig D and Cemig GT, but also all of the wholly owned subsidiaries. It is also worth mentioning the new version of the policy, the fact that the risk appetite to be followed by the Company is explicit, guided by principles that reflect best market practices, and especially, have defined roles and responsibilities.

The next steps in the risk management process involve the consolidation of the model in the other companies of Cemig group, continuous awareness of the employees, including Senior Management, and improvement of risk monitoring tools, ensuring further progress in the process.

CC2.1c How do you prioritize the risks and opportunities identified?

Cemig uses scales to classify risks and opportunities according to their financial impacts, intangible impacts, probability of occurrence and relevance to the Company, with the distribution of percentage estimates between each of the points for each of the scales. Based on these scales, Cemig prioritizes each risk, which allows the hierarchy of risks within a risk/opportunity exposure matrix containing the risks/opportunities raised throughout the process.

In addition, information on the financial implications of risks/opportunities, their controls and measures is fed specifically to the above mentioned "financial impacts" variable used to define the risk/opportunity position in the exposure matrix. Considering it, the system calculates the cost/income of the inherent risk/opportunity (i.e., no management actions), of residual risk/opportunity (after implementation of controls) and planned residual risk/opportunity (after implementation of measures). This allows prioritized

decision making based on robust financial analyzes of scenarios with and without risk/opportunity management.

With respect to the opportunities, the major focus has been on the acquisition of assets with renewable sources. To this end, Cemig adopts an acquisitions structure that occurs through partnerships with investment funds and strategic partners, establishing a growth vehicle that allows the Company, even with a minority interest, to assume a strategic and competitive position in those assets, associating their expertise with the financial capacity of the partners.

In mergers and acquisitions processes undertaken by Cemig, diligence is essential for the evaluation, identification, measurement and treatment of each risk or contingency.

CC2.2 Is climate change integrated into your business strategy?

Yes.

If yes:

CC2.2a Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process.

- i. Risks and opportunities related to climate change are classified and prioritized in exposure matrixes by the Committee for Monitoring Corporate Risk and presented to the Executive Board. These risk and opportunity evaluations are therefore presented to top management, who use them in the development of the Company's Strategic Planning. As Cemig's strategy is defined and approved by the Executive Board, the other Boards develop the planning of their activities. The Strategic Planning process is conducted by the Board of Directors, with the participation of the Executive Board.

During the last annual cycle of Strategic Planning, the Board of Directors approved the updating of the Corporate Master Plan, with the definition of strategic objectives from the short term until 2035. The main drivers of Cemig's business strategy are related to balanced growth, both through new projects and through mergers and acquisitions, with sustainable commitments and shareholder value added in the long term as its main commitments. Aiming at expanding the installed capacity through a low risk portfolio, the expansion in renewable sources is remarkable.

- ii. Aspects of climate change that have influenced Cemig's strategy:

Low-carbon business development: Cemig has identified business opportunities and obtaining market advantages from its low-carbon energy matrix, which are

directed primarily to i) implementation and renewal of renewable energy plants in which Cemig already has expertise and to ii) investment in new energy sources.

Regulatory changes: Cemig identifies regulatory risks related to climate change, which are seriously considered in the Company's strategic decision-making. In particular, it recognizes the commitments made to the energy sector in Brazil's Nationally Determined Contribution (NDC) and manages the associated risks through participation in business associations, monitoring of international negotiations and their developments at the national level. Cemig makes environmental due diligence for the acquisition of new assets (assessment of carbon risk), in order to assess the potential financial impact of the increase of its greenhouse gas emissions in this asset, regarding the possibility of internalization of costs of emissions as a result of new regulations.

Need to mitigate climate change: Cemig, despite already presenting low intensity of GHG emissions, strives to reduce its emissions, including by setting targets for reducing emissions, electricity consumption and electricity losses, taking into account the commitments attributed in the Brazilian NDC to the energy sector. In addition, the use of an internal price for carbon in investment assessments for fossil fuel-based enterprises is in line with global trends in the use of carbon pricing instruments as a mechanism to promote climate change mitigation.

Need to adapt to climate change: Cemig has generating facility with low GHG emission intensity because it is predominantly hydraulic but subject to the consequences of climate change. It therefore invests in the improvement of weather forecasting systems, improvement of the infrastructure of its power plants, transmission lines and distribution networks to deal with the consequences of these events and improvement of the forecast of the availability of water in its generating park. In addition, it has been looking to diversify its matrix by participating in wind power generation through Renova Energia.

- iii. Components of the strategy influenced by short-term climate change (up to five years): Cemig invests in state-of-the-art techniques and equipment that allow better forecasting of storm intensity and location. In addition, it established its corporate goal of reducing emissions in order to reduce the GHG intensity of Scope 1 (tCO₂e) by 8% by 2021, based on the emissions of 2014. It also defined its goal of reducing electricity losses, committing itself to having total losses in 2017 lower than 10.68%.
- iv. Components of the strategy influenced by long-term climate change (over ten years): the need to consolidate low-carbon energy matrices has guided R&D

projects that could be deployed by Cemig on a large scale in the future. Among these projects there are (i) the preparation of the second version of the solarimetric atlas of Minas Gerais; and ii) the generation of electricity in solar plants connected to the electrical system. The climate change scenario opens opportunities for new business for the Company, with expectation of great demand in the long term. Cemig has the company Efficientia S.A., which is involved in the development and feasibility of technological solutions that promote the efficient use of energy in non-residential customers. In addition, Cemig has been taking into account, in its investment decisions, the expectation of a progressive increase in the ambition of nationally determined contributions to the Paris Agreement - which, for Brazil, should be reflected in stricter emission reduction targets to energy sector after 2025.

- v. Maintaining a predominantly renewable matrix and assessing carbon risk allow Cemig to anticipate the risks associated with increasing the cost of generating electricity.

In addition, the development of new technologies, especially the generation of electricity from solar sources, places Cemig in the forefront of the electricity sector, allowing the incorporation of new technologies in its matrix and the diversification of its businesses.

- vi. More substantial strategic decisions made in 2016 by Cemig, influenced by business opportunities, fueled by climate change:

- actions that minimize the physical risks resulting from extreme weather events:
 - improvement in distribution networks: establishment of the Protected Distribution Network, with shielding of lines and networks and regularization of the easement range, as a minimum standard of urban service;
- actions that increase the opportunities for developing low carbon businesses:
 - Equity in Renova: Cemig currently owns 34.15% of Renova's total capital and 15.68% indirectly through Light.
 - Contracting of 150.4 MW of installed capacity in the LER/2014 auction, coming from three wind farms (43.5 MW) and four solar farms (106.9 MWp)
 - In 2016, the works for phase A of Alto Sertão III, with an installed capacity of 411.1 MW, were at an advanced stage of execution (87% completion). When the project is completed, between 2017

and 2019, Renova will add 411 MW of installed capacity to the Company's portfolio (which will total 1.1 GW in operation).

- In January 2016, Renova fully connected the wind farms of the Alto Sertão II complex, commencing the commercial operation of five more farms of the LEN A-3 in 2011. After this stage is finished, it started to have a portfolio in operation of 463.1 MW of installed capacity in wind/solar energy and 190.2 MW in Small Hydroelectric Plants (SHPs).
- In addition, Renova has already completed 100% of the assembly of the solar panels and wind towers of the Hybrid project, only waiting for the connection of the substation to energize the farms. In total, 19,200 photovoltaic panels and two wind farms with eight wind turbines were installed. The investment contributed to the project was R\$ 25.7 million, with funding from Finep Inovação e Pesquisa. When it is fully operational, the hybrid farm will have 26.4 MW of installed capacity, with 21.6 MW of wind energy and 4.8 MW of solar photovoltaic power, with a generation capacity of 12 MW average.

CC2.2c Does your company use an internal price on carbon?

Yes.

If yes:

CC2.2d Please provide details and examples of how your company uses an internal price on carbon.

- i. Scope to which the emissions belong: Scope 1;
- ii. Rational to use a price: first, it is important to point out that in Brazil there is no established price for carbon. However, when assessing the acquisition of enterprises that use fossil fuels, Cemig conducts internal analyzes regarding the carbon risk and its financial impact on the company, i.e., the financial risk of the enterprise in a possible future pricing scenario of GHG emissions in Brazil. In the last assessment made by Cemig, different scenarios of power generation in the Brazilian electrical matrix were considered. In order to calculate the financial impact of the carbon pricing in these assessed projects, the energy to be generated and the GHG emissions were calculated considering each of the scenarios, with the GHG emissions multiplied by the internal carbon price. The results were included in the financial feasibility analysis of the project and

included as operating costs. These assessments were based on the average prices of carbon credits of the VCS (Voluntary Carbon Standard) standard;

- iii. Actual price used: the value used in the pricing of carbon in enterprises to be potentially acquired using fossil fuels is the average value of the annual average VCU (Voluntary Carbon Units), currently equivalent to R\$ 3.56;
- iv. Variations in price over time and between geographical areas: price variation over time and between geographical areas was not considered;
- v. Responsible for pricing: for each assessment, Cemig hires a specialized company to carry out the carbon risk assessment, and is responsible for determining its price, in accordance with the methodology described in items (ii) and (iii) above;
- vi. Example of how carbon pricing affects investment decisions: Cemig does environmental due diligence and sensitivity analyzes for acquiring new assets using fossil fuels (carbon risk assessment) to assess the possible financial impact of the increase of its GHG emissions in this asset, against the possibility of internalizing the costs of emissions as a result of the new regulations. This assessment is carried out by environmental due diligence and sensitivity analyzes related to the acquisition of new fossil-source enterprises, assisting the Company in making decisions regarding the expansion of its business.

CC2.3 Do you engage in activities that could either directly or indirectly influence public policy on climate change through any of the following? (tick all that apply).

- Direct engagement with policy makers
- Trade Associations
- Funding research organizations
- Other
- No

If "Direct engagement with policy makers" is ticked:

CC2.3a On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Other: mitigation and adaptation to climate change	Support	In view of the importance of the Climate Change theme, Cemig has been taking part in the Energy and Climate Change Plan (PEMC) of Minas Gerais, a medium-long-term transversal policy (2020-2030), built through a participatory process, with the objective of promoting the transition to the low-carbon economy, reducing vulnerability to climate change in the territory of the country, and coherently articulating the different initiatives already developed and planned within an integrated territorial strategy.	Cemig supports this legislation with no exceptions.

If "Trade associations" is ticked:

CC2.3b Are you on the Board of any trade associations or provide funding beyond membership?

Yes.

If yes:

CC2.3c Please enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
Brazilian Business Council for Sustainable Development (CEBDS)	Consistent	<p>Within the CEBDS, there is the Thematic Chamber on Energy and Climate Change (CTClima), in which Cemig has a chair. CTClima represents the vision of CEBDS member companies in matters related to climate change, in debates and formulation of public policies with governments and other interest groups. CTClima's mission is "to be an appropriate forum for Companies to understand their role in the context of climate change, helping them to develop strategies that take advantage of opportunities and minimize risks and prepare them for a world with restrictions on greenhouse gas emissions."</p> <p>CEBDS promotes several activities related to the theme, which can contribute to the preparation and improvement of public policies regarding this theme.</p>	Cemig's representative at the Thematic Chamber on Energy and Climate Change (CTClima) participates in meetings, discussions, debates and contributes, when applicable, with suggestions for the formulation of public policies.

If “Funding research organizations” is ticked:

CC2.3d Do you publicly disclose a list of all the research organizations that you fund?

Yes¹.

If “Direct engagement”, “Trade associations”, “Funding research organizations” or “Other” is ticked:

CC2.3f What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

Cemig's institutional relationship with public policy makers regarding climate change is conducted under the approval of the Executive Board, by the superintendencies managing the specific strategic objective and corporate risk associated with the topic. These Superintendencies are updated on the strategy and the Company's Master Plan during the annual Strategic Planning cycle. As described in question CC1.1, the person directly responsible for Global Climate Change Strategy at Cemig is the Deputy Chief Executive Officer. Therefore, all direct and indirect activities in which the Company participates in relation to the development of public policies are assessed ultimately by its staff, after approval of the respective Officer of the responsible area. In August 2016, representatives of member companies of the CEBDs Leaders' Board met with BNDES (Brazil's National Bank for Economic and Social Development) to address the issue of energy efficiency and financing of renewable energies. Cemig was represented by its Deputy Chief Executive Officer. Among other issues, questions were raised about exchange hedge, green bonds and the formation of the Energy Efficiency Front. As a basic assumption, the conduction of all institutional activities follows the assumptions of the document "[10 Climate Initiatives](#)".

¹ Cemig publishes all the research projects that are carried out, organized by theme; the details of the projects are available at: http://www.cemig.com.br/en-us/Company_and_Future/innovation/Research_and_Development/Pages/research_and_development.aspx

CC3 Targets and Initiatives

CC3.1 Did you have an emissions reduction or renewable energy consumption or production target that was active (ongoing or reached completion) in the reporting year?

Absolute target

Intensity target

Renewable energy consumption and/or production target

No

If you have an absolute target:

CC3.1a Please provide details of your absolute target.

Target identification	Scope	% of emissions in scope	% reduction from base year	Metric denominator (intensity targets only)	Base year covered by target	Base year emissions (tCO ₂ e)	Target year	Is this a science-based target?	Comment
Abs-1	Scope 2	0.8%	4%	Not applicable	2011	3,830	2020	No, and we do not anticipate setting one in the next 2 years.	<p>The Company set a goal of reducing electricity consumption of Cemig GT and Cemig D, together, by 4% in 2020, compared to the total consumed in 2011.</p> <p>In 2011, Cemig GT and Cemig D consumed 46,876 MWh of electricity, representing 0.8% of Company's Scope 2 emissions in the year in question (the remaining 99.2% were basically due to electric losses, as well as a small part of the electricity consumption of Efficientia and Cemig Telecom).</p> <p>In that year, the emission factor of the national electricity system was 0.0292 tCO₂/MWh, so the emissions associated with the electricity consumption</p>

									<p>were 1,368 tCO₂. However, to allow comparison with emissions from electricity consumption in 2016, the base year emissions were reported in the next column using the national electricity system emission factor for 2016, which was 0.0817 tCO₂/MWh, resulting in a value of 3,830 tCO₂.</p> <p>It should be noted that the emission factor of Scope 2 is given by emission factors developed by the coefficient of use of fossil fuels in the electricity production of the National Interconnected Electric System (SIN), mainly due to the activity of thermoelectric plants.</p> <p>This emission factor is used to calculate the emissions from the generation of electricity purchased from the SIN (Scope 2), in 2016 it amounted 0.0817 tCO₂/MWh, as mentioned above, calculated on the basis of the data raised by the ONS (Electric System National Operator), and the calculation was developed jointly with the Ministry of Science, Technology and Innovation (MCTI). The methodology adopted is the "Tool to calculate emission factor for an electricity system", approved by the UNFCCC (United Nations Framework Convention on Climate Change).</p>
Abs-2	Scope 1	100%	8%	Not applicable	2014	617,717	2021	No, and we do not anticipate setting one in the next 2 years.	This goal refers to the reduction of emissions of Scope 1, considering all activities in which the Company has operational control. In 2016, direct emissions accounted for 15,462 tCO ₂ , which means a reduction of 97.5% compared to the direct emissions of 2014.

For all types of target, also:

CC3.1e For all of your targets, please provide details on the progress made in the reporting year.

Target identification	% complete (time)	% complete (emissions or renewable energy)	Comment
Abs-1	56%	100%	In 2016, Cemig GT and Cemig D consumed 43,440 MWh of electricity, 7.3% lower than in 2011 (base year of the goal). Therefore, Cemig has already reached and surpassed its goal of reducing its consumption of electricity, which is 4% in relation to 2011.
Abs-2	29%	100%	In 2016, Scope 1 emissions were 15,462 tCO ₂ e against 164,537 tCO ₂ e in 2015, representing a reduction of 90.6%, exceeding the established goal of 8%.

CC3.2 Do you classify any of your existing goods and/or services as low carbon products or do they enable a third party to avoid GHG emissions?

Yes.

If yes:

CC3.2a Please provide details of your products and/or services that you classify as low carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation	Description of product/ Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
Group of products	<p><u>Renewable source power generation:</u> Cemig has more than 98% of its installed capacity to generate energy from renewable sources. By generating renewable energy, Cemig replaces the generation of energy that would probably occur from fossil sources. This initiative allows the reduction of Scope 2 of all consumers connected to the national electricity system.</p>	Avoided emissions	Others - internal classification	31.3%	Less than or equal to 10%	<p>Renewable source power generation:</p> <ul style="list-style-type: none"> i. This initiative allows the reduction of Scope 2 of all consumers connected to the national electricity system. ii. By injecting renewable energy into the national electricity system, Cemig promotes the reduction of the emission factor of this system, benefiting all the energy consumers connected to the system. In 2016, 23,275 GWh of energy were generated by renewable sources (hydraulic + wind + solar). iii. It is estimated that the generation of renewable energy in 2016 prevented the emission of 1,902 million tCO₂. iv. It was assumed that the generation of renewable energy by Cemig avoided the generation of energy by thermal source in the grid of the National Interconnected System. In order to calculate emission reductions, the emission factor of the National Electricity System (SIN) for 2016 was used, calculated for GHG inventories by the Ministry of Science, Technology and Innovation (MCTI), multiplied by the electricity generated by renewable sources. v. The generation of CERs (Certified Emissions Reductions) under the scope of the CDM was considered in 11 projects, with a total reduction of 4,867,624 tCO₂e

						expected.
Group of products	<p><u>Energy efficiency services - Efficientia S.A.</u>: is a wholly owned subsidiary that operates in the development and implementation of energy efficiency projects, cogeneration of energy and offers consultancy to optimize the energy matrix of industries. This initiative allows the reduction of Scope 2 of third parties, since it reduces the consumption of electricity of the national electrical system of its customers.</p>	Avoided emissions	Others - internal classification	-	Less than or equal to 10%	<p>Energy efficiency services - Efficientia S.A.</p> <p>i. This initiative allows the reduction of Scope 2 of third parties, since it reduces the consumption of electricity of the national electrical system of its customers.</p> <p>ii. In 2016 Efficientia presented energy efficiency projects for the public call:</p> <ol style="list-style-type: none"> 1. Puc Minas: Modernization of the lighting system of the Coração Eucarístico Campus, using LED technology (expected savings of 1,042.3 MWh/year); Investment: R\$ 1,619,078.56 2. Minas Tênis Clube: Modernization of the lighting system, using LED technology, solar pool heating and photovoltaic generation in unit II, with an expected saving of 1,300.53 MWh/year; Investment: R\$ 3,626,242.25 3. Santa Casa de Belo Horizonte: Modernization of the lighting system, using LED technology and installation of solar heating in the showers of the building, with an expected saving of 829.09 MWh/year; Investment: R\$ 2,087,064.92 4. Hospital São Lucas: Modernization of the lighting system, using LED technology and installation of solar heating in the showers of the building, with an expected saving of 173.4 MWh/year; Investment: R\$ 533,689.82 5. Hospital Luxemburgo: Modernization of lighting system using LED technology (expected savings of 370.69 MWh/year); Investment: R\$ 443,279.76. 6. Clube Dom Pedro II: Modernization of the lighting system, using LED technology and installation of solar heating in the showers of the changing rooms, with an expected saving of 230.82 MWh/year; Investment: R\$ 896,179.50 7. Apac Belo Horizonte: Installation of solar heating in the

					<p>showers of the changing rooms of the men's area, with an expected saving of 34.53 MWh/year; Investment: R\$ 128,334.72</p> <p>8. Hospital Nossa Senhora de Lourdes: Installation of solar heating in the showers of the building, with an expected saving of 60.23 MWh/year; Investment: R\$ 329,294.24</p> <p>9. Hospital Samuel Libânio: Modernization of the lighting system, using LED technology and installation of solar heating in the showers of the building, with an expected saving of 178.64 MWh/year; Investment: R\$ 538,914.92.</p> <p>iii. In addition, the photovoltaic energy generation projects developed by Efficientia are seen as investments in distributed generation of energy. In 2016 the photovoltaic generation systems were implanted in the following customers:</p> <ul style="list-style-type: none"> • Village I and Village II Condominium: Development and implementation of a Photovoltaic Solar Power Plant (expected generation of 1,018 MWh/year); Investment: R\$ 6,113,000.00. Expected completion in 2017 (Village I) and 2017 (Village II). • Algar Telecom: Development and implementation of 10 Photovoltaic Solar Power Plants (expected generation of 734 MWh/year); Investment: R\$ 3,900,000.00. Completed in 2016; • Algar Telecom: Development and implementation of a Photovoltaic Solar Power Plant (expected generation of 49.8 MWh/year); Investment: R\$ 875,000.00. Expected completion in May 2017. <p>It is estimated that contracts signed in 2016 will result in the emission reduction of 147.18 tCO₂/ year.</p> <p>iv. It is estimated that the contracts signed in 2016 will lead to an economy in the consumption of electricity of 4,220.23 MWh/year. In order to calculate emission reductions, the emission factor of the National Electricity System (SIN) for</p>
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						<p>2016 was used, calculated for GHG inventories by the Ministry of Science, Technology and Innovation (MCTI)², multiplied by the amount of electricity saved and generated.</p> <p>v. The generation of CERs (Certified Emission Reductions) under the CDM was not considered in any project implemented.</p>
Product	<p>Natural Gas: Gasmig, subsidiary of Cemig, exclusive distributor of natural gas channeled throughout the territory of Minas Gerais. In addition, Gasmig develops the Inovagás project, which aims to serve customers with energy efficient solutions. This initiative allows the reduction of Scope 1 of third parties, since it allows its customers the consumption of fossil fuel with lower GHG emission factor.</p>	Low carbon products	Others - internal classification	6.3%	Less than or equal to 10%	<p>Natural Gas - Gasmig</p> <ul style="list-style-type: none"> i. This initiative allows the reduction of Scope 1 of third parties, since it allows its customers the consumption of fossil fuel with lower GHG emission factor. ii. In 2016, Gasmig built 58.9 km of gas pipelines in the Metropolitan Region of Belo Horizonte (RMBH), in the South of Minas Gerais and in Juiz de Fora, aiming at serving consumers in the commercial and industrial segments. Gasmig increased its customer base by 267.5%, from 4,215 in 2015 to 15,490 consumer units in 2016. iii. The Company takes natural gas infrastructure to strategic regions of the state, enabling more intensive fossil fuels to be replaced in the manufacturing industries. iv. In 2016, the consumption of natural gas distributed by Gasmig prevented the emission of 764 tCO₂e. v. Gasmig monitors the amount of natural gas supplied to the sectors it serves, with the Company selling 1,066,351 m³ in 2016. The emission reduction estimate was based on the assumption that, in case there was no natural gas distribution, the industry would consume fuel oil (corresponding to 73.39% of the natural gas consumed in 2016), the vehicles would consume gasoline (3.05%), thermoelectric plants would use diesel (20.30%) and general use (commercial, residential, cogeneration and generation) would use diesel or fuel oil at a stationary source (3.26%). Using the emission factors, lower heat

² GHG emission factors for the National Interconnected System for emission inventories of these gases. Available at <http://www.mct.gov.br/index.php/content/view/321144.html#ancora>.

				<p>powers and densities of the GHG Protocol Brazil, emissions were calculated with natural gas (real scenario) and emissions in case of using fuel, gasoline and diesel (baseline scenario). By subtracting the emissions from the actual emissions scenario of the baseline scenario, the emissions avoided were defined.</p> <p>The generation of CERs (Certified Emission Reductions) under the scope of the CDM was not considered by Gasmig.</p>
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CC3.3 Did you have emissions reduction initiatives that were active within the reporting year (this can include those in the planning and/or implementation phases)?

Yes.

If yes, complete questions CC3.3a, CC3.3b and CC3.3c:

CC3.3a Please identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	-
To be implemented	0	-
Implementation commenced	28	522,813
Implemented	91	3,306,337
Not to be implemented	0	-

CC3.3b. For those initiatives implemented in the reporting year, please provide details in the table below.

Activity type	Description of activity	Estimated annual CO ₂ e savings (metric tonnes CO ₂ e)	Scope	Voluntary/Mandatory	Annual monetary savings (R\$)	Investment required (R\$)	Payback period	Estimated lifetime of the initiative	Comment
Energy Efficiency: Processes	<p>Business Nature: In 2016, Cemig installed refurbished equipment, called LUVOS (regenerative air heaters) in Igarapé Thermal Power Plant, in order to recover the operational efficiency of the plant to the project characteristics, with consequent saving of the amount of fuel used/MWh generated by the plant. The LUVOS heat the combustion air by harnessing the residual heat from the gases in the chimney, reducing the temperature of the gases released into the atmosphere, increasing the efficiency of the boiler. The reform included replacing all baskets, replacing and improving soot sealing and blowing systems, among other improvement services.</p> <p>The Company's Scope 1 emissions are reduced due to the reduction in the burning of fossil fuels (fuel oil).</p> <p>This initiative is voluntary in relation to external regulators.</p>	1,906	Scope 1	Voluntary	1.235 million	9.513 million	4-10 years	16-20 years	-
Low carbon energy installation	In January 2016, Renova fully connected the wind farms of Alto Sertão II complex, starting the commercial operation of five other farms, with an operating portfolio of 463.1 MW of installed capacity in wind energy.	920	Scope 1	Voluntary	Confidential information	Confidential information	Confidential information	16 - 20 years	-

	<p>Only 34.15% of the emission reduction associated with the implementation of the Renova wind farms in 2016 was considered in the scope of Cemig's CDP, since Cemig has an equity interest of 34.15% in Renova. The Company's Scope 1 emissions are reduced, since, by increasing its electricity generation in low-carbon plants, Cemig reduces its Scope 1 emissions per MWh produced (to calculate the emission reductions, whose result is in the next Column, they used the emission factor of tCO₂ of Scope 1 per MWh produced by Cemig in 2016, equal to 0.000664 tCO₂e/MWh produced). If Cemig's Scope 2 emissions reductions were taken into account, using the emissions factor of the Brazilian electrical system for inventory, the emission reductions would be 331,437 tCO₂e, but the emission reductions considered in the next column are those of Scope 1 of Cemig.</p> <p>This initiative is voluntary in relation to external regulators.</p>								
Transportation: fleet	<p>Nature of the activity: in 2016, Cemig stopped consuming 1,097,488 liters of fuel in its fleet reducing consumption by 1.22% compared to 2015, representing a saving of approximately R\$ 1.6 million for the company. Comparing to 2012 and 2016, Cemig reduced its annual consumption by 10.16%, i.e., there was a reduction in consumption of more than one million liters. This reduction in consumption is due to the updating of the fleet of vehicles, resulting from the "Fleet Optimization Program", implemented in 2015. The</p>	858	Scope 1	Voluntary	1.6 million	0	0	-	The investment was considered zero, since the fleet of light vehicles and light trucks is all leased from third parties and, by contractual

	<p>optimization of the fleet was possible because all vehicles replaced in 2010 were manufactured with Electronic Management System installed. This tool has been allowing constant monitoring in the use of vehicles. Between 2012 and 2016 there was a reduction of 630 vehicles. In addition, in 2016, with the implementation of the new fleet replacement program, about 93% of the truck fleet started to use Diesel S10 as the main fuel.</p> <p>The Company's Scope 1 emissions are reduced due to the reduction in the burning of fossil fuels in its fleet of vehicles.</p> <p>This initiative is voluntary in relation to external regulators.</p>								<p>requirement , the vehicles are semi-new. The light trucks use the S-10 diesel fuel, which has reduced sulfur content.</p>
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CC3.3c What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	Federal Law No. 9.991/2000: this Law states that 1% of the organization's net operating revenue should be directed to R&D funding and energy efficiency programs. Thus, Cemig has created Intelligent Energy (EI), a program focused on energy efficiency. It is made up of several multiyear and social and environmental projects that develop energy efficiency actions in communities with low income (in compliance with article 1, item V, of Law No. 9.991/2000, included by Law No. 12.212/2010) and in non-profit and philanthropic institutions.
Internal finance mechanisms	The replacement of the fleet of vehicles uses resources from the Company's Investment Programs. Cemig is required to renew its fleet of vehicles annually so that the average age of vehicles does not exceed five years, a legal depreciation period set by the granting authority.
Dedicated budget for low carbon product R&D	<p>The Research and Development (R&D) Program at Cemig aims to encourage the constant search for innovation and face the technological challenges of the power sector. In this context, Law No. 9.991/2000 establishes that power utilities companies and permit holders for distribution, generation and transmission of electricity annually apply part of their net operating revenue in Research and Development Program of the Electricity Sector, regulated by the Brazilian National Electric Energy Agency (Aneel).</p> <p>In order to guarantee the application of this resource, Cemig periodically publishes notices to attract projects in various lines of action. Among the lines of projects related to climate change are: Alternative sources distributed and decentralized generation, thermoelectric generation and energy efficiency; Basin management and energy planning; Measurement, billing and commercial losses; and Environment.</p>
Dedicated budget for other emissions reduction activities	Within the Distributor Development Program (PDD), there is a budget dedicated to reduce Cemig's electric losses in the system and initiatives to reduce emissions from Cemig and the national electricity system.
Internal price on carbon	Cemig assesses the risk of increased carbon emissions in its energy matrix and the financial impact of this increase by performing environmental due diligence and sensitivity analyzes relating to the acquisition of new enterprises, which is assisting the Company in the decision-making regarding the expansion of its business.
Other (Distributed generation)	<p>In 2012, Aneel Normative Resolution No. 482/2012 came into force, which establishes the general conditions for the access of microgeneration and distributed minigeration to the electric energy distribution systems through the electric energy compensation modalities. Thus, the Brazilian consumer became able to generate its own electricity from renewable sources and to provide the surplus to the electricity grid of its locality. These are innovations that combine financial economy, social-environmental awareness and self-sustainability.</p> <p>In general, the presence of small generators near the loads can provide several benefits for the electrical system and utility companies, among which the following should be mentioned:</p> <ul style="list-style-type: none"> • the postponement of investments in expansion in the distribution and transmission systems; • the low environmental impact; the improvement of the network voltage level in the heavy load period; • the increase of energy efficiency of the source by reducing losses in production and in electricity transmission; • the diversification of the energy matrix; and • favoring the creation of new business models applicable to the electricity sector. <p>Cemig, the incumbent in the process, and aligned with the development of the technology, connected the first electric micro-generation unit of Brazil in September</p>

	<p>2012, the same year that Aneel created the Electricity Compensation System. Since then, it has been leading the market of distributed generation connections in Brazil.</p> <p>Since the publication of Resolution 482 in 2012 until December 2016, 1,560 power plants have already been installed, of which 1,546 (99%) have photovoltaic solar power, 12 (1%) are fueled by biogas, one is fueled by biomass power and one is fueled by hydraulic power.</p> <p>In 2016, 1,224 power plants were installed, being 1,211 solar plant, 11 biogas plant, one biomass plant and one hydraulic plant.</p>
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CC4. Communications

CC4.1 Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication	Status	Page/Section reference	Attach the document	Comment
In mainstream reports (including an integrated report) but have not used the CDSB Framework	Complete	Page 133 / Environment Section, Climate Changes subsection	http://2016report.cemig.com.br/	-
In other regulatory filings	Complete	Form 20F: Page 75 / "Carbon Market" Section	http://cemig.infoinvest.com.br/ptb/14983/Cemig%20Form%2020F%202016.pdf	-
In voluntary communications	Complete	Throughout the document (GHG Emissions Inventory)	http://www.cemig.com.br/en-us/Company_and_Future/Sustainability/Programs/climate_changes/Documents/Greenhouse%20Gases%20Inventories/RELAT%C3%93RIO%20INVENT%C3%81RIO%20CEMIG%20-%202016_FINAL_INGLES.pdf	-

Risks & Opportunities

CC5. Climate Change Risks

CC5.1 Have you identified any inherent climate change risks that have the potential to generate a substantive change in your business operations, revenue or expenditure? (Tick all that apply)

Please identify the relevant categories:

- (X) Risks driven by changes in regulation
- (X) Risks driven by changes in physical climate parameters
- (X) Risks driven by changes in other climate-related developments

CC5.1a Please describe your inherent risks that are driven by changes in regulation.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
General environmental regulations, including planning	Through the National Policy on Climate Change, the Brazilian government has set a voluntary target to reduce from 36.1% to 38.9% the Brazilian GHG emissions projected for 2020. As a result of COP 21, the following are the new goals assumed by the Brazilian Government through its NDC: reduce emissions by 37% until 2025 and by 43% until 2030, being 2005 the base year. More specifically, the following are the commitments established by NDC for the energy sector: 1) achieve an estimated 45% share of renewable energy in the energy matrix by 2030, including: - expand the use of renewable sources, in addition to	Increased operational cost	3 to 6 years	Direct	Likely	Low - medium	Less than 1% of the net operating revenue.	<p>Management methods include setting a goal to reduce the GHG emissions and, for new acquisitions, the assessment of the carbon risk in due diligence operations, immediately minimizing the likelihood and magnitude of risk.</p> <p>Cemig has sought opportunities to expand the generation of energy in renewable sources, thus minimizing the magnitude of the risk in the time horizon of up to five years.</p> <p>In January 2016, for example, Cemig signed the concession agreement for the operation of 18 hydroelectric power plants, corresponding to an installed</p>	<p>Less than R\$ 400,000.00.</p> <p>The costs are annual, being associated to the maintenance of the environmental team, and will exist as long as the risk persists.</p>

	<p>hydropower, in the total energy matrix for a 28% to 33% share by 2030; 2) expand domestic use of non-fossil energy sources, increasing the share of renewable energy (in addition to hydropower) in the supply of electricity to at least 23% by 2030, including increasing the wind, biomass and solar share; 3) achieve 10% efficiency gains in the electricity sector by 2030.</p> <p>The risk associated with the establishment of this commitment is the increase in operating costs related to possible agreements for the electricity sector, mainly related to the creation of a tax on carbon emissions.</p>							<p>capacity of 699.59 MW. Fourteen of these plants - including Três Marias, Itutinga and Salto Grande - were already operated by Cemig, but their concession agreement had been canceled. four new hydroelectric power plants began to be operated by Cemig: Ervália, Coronel Domiciano, Sinceridade and Neblina.</p> <p>In addition, Cemig's engagement in the theme of climate change via sectorial associations, such as CEBDS, also allows the assessment and management of the risks associated with new climate regulations in Brazil (including NDC and carbon pricing instruments), taking into account</p>	
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								the various studies developed by these entities.	
Carbon taxes	Despite having a low-carbon energy matrix, Cemig operates a fossil fuel-fired thermal plant, which may have its operations impacted in the case of establishing carbon taxation in Brazil. This taxation also poses a risk if Cemig plans to expand its electricity generation business through fossil fuel-fired thermals in the future.	Increased operational cost	3 to 6 years	Direct	About as likely as not	Low - medium	<p>Less than 1% of the net operating revenue.</p> <p>Alternatively, the annual cost of compliance with a carbon taxation regime could be considered to be between US\$ 154,620 (for a tax of US\$ 10/tCO₂e) and US\$ 773,100 (for a tax of US\$ 50/tCO₂e), considering that the tax would only be on GHG emissions of Scope 1 (equivalent to 15,462 tCO₂e in 2016).</p> <p>These expenses would represent, respectively, 0.019% and 0.096% of EBITDA in 2016 (R\$ 12.63 billion)*.</p> <p>*exchange rate considered: R\$ 3.26/US\$, as of 12/30/2016, according to data from the Central Bank of Brazil.</p>	<p>Cemig assesses carbon risk in due diligence operations, accounts for corporate GHG emissions through the Company's emissions inventory, and sets emission reduction targets for GHG.</p> <p>In 2016, for example, the Executive Board decided to approve the goal of reducing greenhouse gas emissions by 8% until 2021, based on the emissions established in 2014.</p> <p>Furthermore, when assessing the acquisition of enterprises that use fossil fuels, Cemig conducts internal analyzes regarding the carbon risk and its financial impact on the Company, i.e.,</p>	<p>Less than R\$ 400,000.00.</p> <p>The costs are annually associated with the maintenance of the environment team of the Thermal Plant and implementation of Company's emission inventories. The costs will exist as long as the risk persists.</p>

								<p>the financial risk of the enterprise in a possible future pricing scenario of GHG emissions in Brazil. In the last assessment made by Cemig, different scenarios of power generation in the Brazilian electrical matrix were considered. In order to calculate the financial impact of the carbon pricing in these assessed projects, the energy to be generated and the GHG emissions were calculated considering each of the scenarios, with the GHG emissions multiplied by the internal carbon price. The results were included in the financial feasibility analysis of the project and included as operating costs. The value used in carbon pricing for potentially fossil fuel-consuming enterprises is the average annual</p>	
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								<p>value of VCU (Voluntary Carbon Units), currently equivalent to R\$ 3.56.</p> <p>With these actions, it is expected that the magnitude of the risk of taxation for the company will be reduced when the new regulations are implemented.</p>	
Cap and trade schemes	<p>The establishment of a market for the commercialization of GHG emissions of cap-and-trade type in Brazil may entail the need for greater planning by Cemig, regarding compliance with specific market regulations, especially in relation to emission monitoring and verification.</p>	<p>Increased operational cost</p>	<p>3 to 6 years</p>	<p>Direct</p>	<p>About as likely as not</p>	<p>Low - medium</p>	<p>Less than R\$ 2 million.</p>	<p>Cemig has professionals trained in the identification of projects that generate carbon credits and long-term contracts with verification and certification Companies, thus reducing the likelihood of the materialization of this risk for the Company. Cemig already has CDM emission reduction projects registered with the UNFCCC.</p> <p>In 2016, specifically, the monitoring of</p>	<p>Less than R\$ 300,000.00.</p> <p>The associated costs are those related to the monitoring and auditing required for the validation and commercialization of the credits. The costs are not annual and will occur at the time of the audits.</p>

								<p>these projects and their due monitoring were carried out according to the registered PDDs. In addition, a reassessment of the emission reduction potential of one of them was carried out: the Cachoeirão PCH project (Project 4788 in the CDM).</p> <p>Cemig is participating in the Emissions Trading System Simulation project, an initiative of the Center for Sustainability Studies, GVces, of São Paulo Business School of the Getúlio Vargas Foundation (FGV EAESP). The purpose of the project is to generate knowledge from the business sector about the operation of an emissions trading system (SCE), one of the main economic instruments of greenhouse gas</p>
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								<p>emission mitigation policies already implemented in several countries. With this project, Cemig will have the opportunity to act in the Simulation, based on defined rules and parameters, operating through online platform from the Rio de Janeiro's Environmental Stock Exchange (BVRio).</p> <p>Furthermore, when assessing the acquisition of enterprises that use fossil fuels, Cemig conducts internal analyzes regarding the carbon risk and its financial impact on the company, i.e., the financial risk of the enterprise in a possible future pricing scenario of GHG emissions in Brazil. In the last assessment made by Cemig, different scenarios of power generation in the Brazilian electrical matrix were</p>	
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								<p>considered. In order to calculate the financial impact of the carbon pricing in these assessed projects, the energy to be generated and the GHG emissions were calculated considering each of the scenarios, with the GHG emissions multiplied by the internal carbon price. The results were included in the financial feasibility analysis of the project and included as operating costs. The value used in carbon pricing for potentially fossil fuel-consuming enterprises is the average annual value of VCU (Voluntary Carbon Units), currently equivalent to R\$ 3.56.</p>	
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<p>Uncertainty surrounding new regulation</p>	<p>For the inventory of its GHG emissions, Cemig uses ISO 14.064-1 and GHG Protocol to ensure the reliability of the data collected.</p> <p>In the establishment of an emissions trading market, carbon taxation or other emission reduction instruments, the adoption of other methodologies and standards may be required in the preparation of corporate inventories. Thus, Cemig may have to adjust its current and well-established procedures to comply with the new regulations that may be adopted.</p>	<p>Increased operational cost</p>	<p>1 to 3 years</p>	<p>Direct</p>	<p>Unlikely</p>	<p>Low</p>	<p>Less than R\$ 100,000.00.</p>	<p>For the inventory of its GHG emissions, Cemig uses ISO 14.064-1 and GHG Protocol to ensure the reliability of the collected data, as well as third-party verification. With this action, it is expected to reduce the magnitude of the risk and the likelihood of its materialization.</p>	<p>Less than R\$ 50,000.00.</p> <p>The associated costs are annual and relate to the performance of the emissions inventory and its third party audit. These costs will exist whenever the inventory of emissions is made and verified by third party.</p>
<p>Other regulatory drivers</p>	<p>In order to propose measures to stimulate energy efficiency in the country, the Ministry of Mines and Energy has published the National Energy Efficiency Plan (PNEf), which uses</p>	<p>Reduced demand for goods/services</p>	<p>1 to 3 years</p>	<p>Direct</p>	<p>More likely than not</p>	<p>Low - medium</p>	<p>Less than R\$ 10 million.</p>	<p>Cemig follows the legal discussions, both at the federal level and at the state and municipal levels. Additionally, it promotes residential and industrial energy efficiency</p>	<p>In 2015, R\$ 39 million was invested. The costs are related to investments in energy efficiency programs.</p>

	<p>the National Plan on Climate Change as one of its references and mentions mitigation of climate changes as one of its goals.</p> <p>The PNEf adopts the goal of reducing 10% of electricity consumption for 2030, referring to the consumption scenario, based on 2004. This could reduce Cemig's electricity supply to its customers, influencing the Company's business.</p>							<p>programs, which are described in the Annual and Sustainability Report.</p> <p>An example of a project developed in 2016 was the replacement of showers by solar heating systems in low-income housing estates, which generated energy savings of 1,303 MWh/year and a reduction in demand at the end of 1,033 kW.</p>	
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CC5.1b Please describe your inherent risks that are driven by changes in physical climate parameters.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in precipitation pattern	Climate change may cause changes in seasonal patterns of rainfall, with extreme rainfall events and more pronounced drought, as well as changes in its geographical distribution. In addition, there may be change in the average amount of precipitation, changing the amount of water that reaches the reservoirs of the hydroelectric power plants. As the electricity production of Cemig is basically hydraulic, these changes may cause reduction in our generation capacity.	Reduction/di sruption in production capacity	> 6 years	Direct	More likely than not	Low - medium	About 15% of the revenue obtained with their own power generation.	Aneel, Brazilian National Electric Energy Agency, through the Strategic R&D Project 010 - "Climate change effects on the hydrological regime of river basins and assured energy from hydroelectric projects," proposed the study of these issues. Cemig was part of the consortium of companies that funded the project. Through simulations with climate models, as well as consideration of the effects of the evolution of land use and consumptive uses of water, they evaluated variations in rainfall and the consequences for the generation of hydroelectric power in 2041, 2071 and 2100. In conclusion, to confirm the emissions scenario A1B of the IPCC for 2010-2100, from climatological simulations and	Whereas currently the management of this risk is carried out within the historical pattern of climate changes, the current management cost is the cost for contracting hedge for short-term price protection. For example, by 2017, the cost of purchasing energy to protect hydrological risk will be R\$ 595 million. It is estimated that this expense could generate protection of Cemig GT's revenue of approximately

								<p>physical safeguards calculation, there may be a reduction in the availability of hydroelectric generation in Brazil from 15% to 25%. However, the study shows possibilities of reduction from 2041, and yet there is no evidence that it is happening. Thus, currently, the management of hydrological risk is made considering the randomness of weather phenomena without taking into account the effects of climate change.</p> <p>In order to do so, Cemig has a specific organizational structure that is fully dedicated to the subject and supports the decisions of the Company's risk management committees, whose purpose is to efficiently handle corporate risks involving operational, commercial, financial and regulatory aspects of the companies of Cemig group, particularly in the sectorial scenario</p>	<p>R\$ 1,087 million, generating a benefit of R\$ 493 million.</p>
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								<p>of tariff adjustment and hydrological restrictions. It also has the Energy Risk Management Committee (CGRE) with the objective of minimizing risks in energy purchase and sale contracts, as well as mitigate the risk of short-term exposure due to bad hydrological conditions.</p> <p>Cemig also participates in the Energy Reallocation Mechanism, with the purpose of sharing of hydrological risks: plants in situation of high inflows and generation of power transfer energy to the plants in situation of low inflows and generation of power. This participation gives freedom to the ONS (National System Operator) to dispatch the plants and help ensure compliance with energy sales commitments entered into by Cemig.</p>
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<p>Change in precipitation extremes and droughts</p>	<p>Climate changes may cause undesirable impacts on reservoirs because of their silting, which may be accelerated (or, in an optimistic scenario, less accelerated) depending on how changes in pluviometric and hydrologic regimes will occur for each reservoir. This may reduce the life of the reservoirs and increase its maintenance costs.</p>	<p>Reduction/disruption in production capacity</p>	<p>> 6 years</p>	<p>Direct</p>	<p>Unlikely</p>	<p>Medium</p>	<p>Less than 0.5% of the net operating revenue.</p>	<p>The risk of silting the reservoirs is managed by Cemig through a series of actions such as mapping the changes in the morphology of the bed of the reservoirs due to the sediment deposition; monitoring the volume decrease of the reservoirs; studies on the useful life of the reservoirs; monitoring of the sediment supply. Cemig also participates in the Energy Reallocation Mechanism, with the purpose of sharing of hydrological risks: plants in situation of high inflows and generation of power transfer energy to the plants in situation of low inflows and generation of power. This participation gives freedom to the ONS (National System Operator) to dispatch the plants and ensure compliance with energy sales commitments entered into by Cemig. These actions contribute to both the reduction of</p>	<p>Less than R\$ 2 million.</p> <p>The costs are annual and associated with the maintenance of equipment and the meteorological, dams' safety and risk management teams, as well as investments in R&D and alternative forms of electricity generation. These costs will exist as long as the risk persists.</p>
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								probability and the magnitude of the risk.	
Change in mean (average) temperature	Climate change may cause an increase in average temperatures and changes in rainfall and drought regimes and, indirectly, may lead to some risks to the Energy Transmission System, as prolonged drought conditions maximize the risk of fire. Fires, within or adjacent to easement ranges, may cause occurrences of unavailability of transmission lines.	Reduction/di sruption in production capacity	3 to 6 years	Direct	About as likely as not	High	Less than 1% of the net operating revenue.	<p>Cemig continually inspects and cleans the easement ranges (limited to minimum removal of vegetation, avoiding cutting where there is no interference with TL's) of its transmission lines to maximize the safety and availability of transmission functions. For example, in 2016 easement ranges were cleaned over a total area of 11,663,515 m² along Cemig structures and transmission lines.</p> <p>In addition, it creates firebreaks at the foot of the towers and makes the application of anti-flame painting</p>	<p>Less than R\$ 2 million</p> <p>The costs are annual and associated with the cleaning process of the easement range of the transmission lines.</p>

								in wooden posts located in places of risk.	
Change in precipitation extremes and droughts	Excessive rainfall can cause structural problems in dams, leading to unavailability of power generation.	Reduction/di sruption in production capacity	> 6 years	Direct	Very unlikely	High	Less than 1% of the net operating revenue.	The annual dam safety cycle consists of field inspections, collection and analysis of instrumentation data, planning and monitoring of maintenance services, analysis of results and classification of civil structures. The vulnerability of each dam is automatically calculated on a continuous basis and is monitored by the Dams Safety and Control System - Inspector, which was developed by an R&D project and incorporates deterioration georeferencing tools, enabling a global analysis of the behavior of each dam. Cemig was a pioneer in Brazil in the preparation of emergency plans for dam rupture, and began studies on the subject in 2003, and there are now specific emergency plans for	Less than R\$ 2 million. The costs are annual and associated to the maintenance of equipment and the meteorology, dam safety and risk management teams. These costs will exist as long as the risk persists.

								each dam. These actions are currently carried out and contribute to reduce the probability of occurrence of this risk in the short term.	
Change in precipitation extremes and droughts	The occurrence of heavy rains in a short period of time, accompanied by windings and lightning, can cause physical damages to the installations that transport and distribute energy, leading to the unavailability of these facilities and increase in Cemig's costs, caused by reimbursement to consumers in Interruptions in the power supply. These phenomena are increasingly associated with the effects of an unfavorable microclimate, typical of large urban centers.	Reduction/di sruption in production capacity	Up to 1 year	Direct	Very likely	High	Less than 1% of the net operating revenue.	Management methods aim to reduce the magnitude of this risk in the medium term by means of preventive adaptation measures, such as the management of urban forestation by means of pruning, the operation of weather stations and the meteorological radar, which more accurately predicts the occurrence and intensity of storms, and the emergency plan with allocation of maintenance teams for the rapid restoration of energy supply.	Less than R\$ 35 million. The associated costs are those related to the maintenance of the containment teams of this type of risk, management of urban afforestation, and operation of the weather stations and radars

CC5.1c. Please describe your inherent risks that are driven by changes in other climate-related developments.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Changing consumer behavior	Consumers can reduce their electricity consumption, motivated by discussions and incentive programs to mitigate climate change or by using other forms of energy, such as the replacement of electricity by solar thermal energy for heating water for residential shower.	Reduced demand for goods/services	> 6 years	Direct	Unlikely	Medium	The potential financial implications of this possible change in behavior are unknown to Cemig.	Because Cemig did not know the possible financial implications, management methods for this risk were not established.	Because Cemig did not know the possible financial implications, management methods for this risk were not established.
Changing consumer behavior	High temperatures can cause an increase in electricity consumption and overload the electricity distribution system in the most critical regions of the Minas Gerais State, and may cause less availability of energy supply to consumers in	Reduction/disruption in production capacity	Up to 1 year	Direct	About as likely as not	High	Less than 1% of the net operating revenue.	<p>This risk is managed through:</p> <ul style="list-style-type: none"> • Implementation of the diagnosis of the electrical system for the need of expansion works; • Monitoring of operational conditions; and • Repriorization of works. <p>These actions contribute both to the reduction of</p>	<p>Less than R\$ 400,000.00.</p> <p>The costs are annual and associated to the maintenance of the team responsible for carrying out the planned actions to minimize the risk of unavailability of the electric distribution</p>

	these regions.							<p>probability and to the magnitude of the impact, already in the short term.</p> <p>Risk minimization is also done through investment program, Cemig Distribuição's PDD, which aims to increase the availability of electricity in a continuous way, with quality, safety and quantity required by customers, promoting social and economic development in the concession area of Cemig, making investments in electrical assets necessary for energy distribution.</p> <p>In 2016, the PDD consisted of implementation of high, medium and low voltage enterprises associated with the expansion, reinforcement, renovation and renewal of Cemig Distribuição's assets, including construction and expansion of substations, expansion, reinforcement and reform of distribution</p>	<p>system.</p> <p>Costs estimated herein do not include investments in enhancements and improvements to the distribution system.</p> <p>These costs will exist as long as the risk persists.</p>
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								lines of high, medium and low voltage, as well as replacement and installation of equipment in substations and in medium voltage distribution lines.	
Reputation	<p>Should Cemig need to expand its energy supply through fossil fuel-fired power plants, it could be criticized by society, impacting on the brand's value.</p> <p>This impact can be even greater if the increase in generation through fossil fuel plants, as it leads to the worsening of Cemig's sustainability indicators, leads to the reduction of the Company's score in questionnaires such as ISE (Corporate Sustainability Index of BM&FBovespa) and DJSI (Dow Jones Sustainability Index). In an</p>	Reduced stock price (market valuation)	> 6 years	Direct	Unlikely	Medium	<p>It is estimated that the shares of companies that make up the ISE show higher returns and lower volatility. Based on the literature, it is estimated, for example, that the market value of companies that are part of the ISE is between 10% and 19% higher than the average (Rossi, 2009; BM&FBovespa, 2012). It can therefore be estimated that Cemig's non-inclusion in the ISE could correspond to a reduction of 10% of its market value: an amount equivalent to R\$ 977 million, considering a market value of R\$ 9.773 billion (referring to 2016).</p>	<p>One of the methodologies that Cemig uses to assess its image and reputation before its stakeholders for its action on climate change is to assess the degree of esteem, admiration, confidence and empathy the general public has about the Company through RepTrak™ Deep Dive methodology, forming the general Pulse reputation index. The Brand and Reputation Committee was formalized in 2011, which analyzes the actions to be implemented to improve the Company's performance in this area. This way of acting allows Cemig to be prepared to reduce the probability and magnitude of this</p>	<p>Less than R\$ 1 million.</p> <p>It is associated with the cost of contracting the brand value search. This cost will exist whenever the search is done.</p>

	extreme case, this risk could lead to non-inclusion of Cemig in the portfolios of these sustainability indices in a given year, resulting in a decline in market value and deterioration of the Company's reputation before investors.							risk, if it occurs, in the short term. In addition, Cemig responds annually to ISE and DJSI questionnaires.	
Changing consumer behavior	Cemig may have to expand its energy supply through the activation of its Thermolectric Plant (Igarapé TPP) to meet, in a short-term scenario, a significant increase in demand for energy by the industrial sector. This will increase their emissions	Reduction/di sruption in production capacity	3 to 6 years	Direct	About as likely as not	High	Less than 1% of the net operating revenue.	This risk is managed by Horosazonal and Dynamic Modulation Tariff Programs. The purpose is to ensure that demand for electricity is met, even at peak times, thus delaying the expansion of generation capacity and the activation of thermolectric plants.	Less than R\$ 400,000.00. The costs are annual and associated to the maintenance of the team responsible for carrying out the planned actions to minimize the risk of unavailability of the electric system. These costs will exist as long as the risk persists.

CC6. Climate Change Opportunities

**CC6.1 Have you identified any inherent climate change opportunities that have the potential to generate a substantive change in your business operations, revenue or expenditure?
(Tick all that apply)**

Please identify the relevant categories:

- (X) Opportunities driven by changes in regulation
- (X) Opportunities driven by changes in physical climate parameters
- (X) Opportunities driven by changes in other climate-related developments

CC6.1a Please describe your inherent opportunities that are driven by changes in regulation.

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
International agreements	Compliance with regulatory requirements and the emergence of new international agreements may create opportunities for Cemig, as the Company, due to it has a predominantly renewable and low-carbon energy matrix, is better prepared than its competitors to suit to this scenario. Establishing an emission commercialization market of cap-and-trade type in Brazil or internationally, in the form of CDM, for example, could cause Cemig to position itself as a major supplier of emission reduction certificates. This opportunity could lead to an increase in revenue at Cemig.	Premium price opportunities	3 to 6 years	Direct	Very likely	Medium	Less than 1% of the net operating revenue.	Cemig has professionals trained in the identification of projects that generate carbon credits and has long-term contracts with verification and certification companies, thus increasing the possibility of taking advantage of this opportunity. Cemig already has CDM emission reduction projects registered with the UNFCCC. In 2016, the follow up of these projects and their due monitoring were carried out according to the registered PDDs. In addition, a reassessment of the emission reduction potential of one of them was carried out: the Cachoeirão	Less than R\$ 1 million. The associated costs are those related to the monitoring and auditing required for the validation and commercialization of the credits. The costs are not annual and will occur at the time of the audits.

								SHP project (Project 4788 in the CDM).	
Emission reporting obligations	Cemig's current generation matrix is predominantly renewable. The existence of emission reporting obligations will highlight its low GHG emission energy matrix, which may attract more investors to the Company, in addition to improving its reputation.	Increased stock price (market valuation)	> 6 years	Direct	About as likely as not	Low	Less than 1% of the net operating revenue.	In relation to the emissions report, Cemig already develops its annual GHG inventory, which is made available on the Company's website, i.e., the Company is already prepared to deal with this opportunity. An example is given by the preparation of the 2016 GHG Inventory.	Less than R\$ 50,000.00. The associated costs are annual and are related to the preparation of the emissions inventory and its third party audit. This cost will always exist when the audited emissions inventory is made.
Product labeling regulations and standards	If regulations are established that benefit the acquisition of renewable energy (green energy), Cemig will benefit from having a renewable matrix, which is already recognized as a strategic differential factor of the Company.	Premium price opportunities	> 6 years	Direct	Likely	Low	Less than 1% of the net operating revenue.	The energy commercialization department, together with the Company's sustainability department, has accompanied the possibilities of commercialization of green energy. This participation takes place through specific forums on "green seal" within the scope of CCEE - Chamber of Commercialization of Electric Energy,	Less than R\$ 10 million. The estimated costs are related to the certification of renewable energy when the subject is regulated in Brazil.

								to which Cemig is associated. All concrete possibilities identified by Cemig should be used.	
Other regulatory drivers	<p>With the aim of expanding the supply of low-emission electricity in the Brazilian electricity system, the government could stimulate the establishment of more attractive financing lines for renewable energy generation.</p> <p>For example, reduced spreads may be an opportunity to reduce the cost of capital for the Company.</p>	Reduced capital costs	1 to 3 years	Direct	Likely	Low	The analysis of financial relevance has not been done so far.	Because Cemig did not know the possible financial implications, management methods for this opportunity were not established.	Because Cemig did not know the possible financial implications, management methods for this opportunity were not established.

CC6.1b Please describe the inherent opportunities that are driven by changes in physical climate parameters.

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in precipitation extremes and droughts	The 4th IPCC Report examines possible scenarios for changes in precipitation patterns worldwide and indicates that in the South-east Region, where Cemig has most of its reservoirs, and South Region of Brazil, there may be a fluctuation between maintenance and increase of water production. This projection is confirmed in the 5th IPCC Report, according to which hydroelectric systems in South Region of Brazil (mainly in the Paraná River basin) may experience	Increased production capacity	> 6 years	Direct	About as likely as not	High	Less than 1% of the net operating revenue.	Cemig has specialists in Meteorology and Hydrology who, by means of mathematical models, estimate future precipitation and future inflows. Based on the current availability and projection of future availability, the operation of the power plants is optimized. The Hydrometeorological Telemetry System (STH) has 168 stations for collecting, in real time, climatological and hydrological data in strategic locations distributed in the Minas Gerais State. The data received are processed by a software, with the accomplishment of calculations, storage in a database and display of the quantities in a systematized way. With STH, Cemig has constant access to	Less than R\$ 1 million. The costs are annual and associated with the maintenance of equipment and meteorological teams. These costs will exist as long as the risk persists.

	a slight increase in energy production in scenario A2 (Lucena et al., 2009). As a result, Cemig may request an increase in the physical guarantees of its power plants, especially its Small Hydroelectric Plants (SHPs).							updated rainfall and river and reservoir levels, allowing the use of water availability fluctuations to generate electricity.	
Change in mean (average) temperature	The likely rise in average temperatures will lead to a change in consumption patterns, such as increased use of ventilation and cooling systems, which will result in increased demand for energy. A study made by Rodrigues <i>et al.</i> (2013) evaluated the possible impact of climate change on the residential demand for electricity, based	Increased demand for existing products / services	> 6 years	Direct	About as likely as not	High	Less than 1% of the net operating revenue.	In order to prepare for increasing energy demand, Cemig has been increasing the availability of electricity distribution infrastructure to meet the growth of this market, through reinforcement works in substations, lines and distribution networks. These actions contribute both to increasing the probability of taking advantage of this opportunity and to its magnitude. The five-year investment cycle, according to sector regulation, covers the period from 2013 to 2017, with a value	Less than R\$ 400,000.00. The costs are annual and associated with the maintenance of the team responsible for carrying out the planned actions to minimize the risk of unavailability of the electric distribution system. These costs will exist as long as the risk persists.

	<p>on projections of average quarterly temperature increase according to the GHG emission scenario of the 4th IPCC Report. The results suggest that residential electricity demand in Brazil may increase in response to the projected increase in temperature.</p>							<p>exceeding R\$ 5.5 billion approved for the period, distributed among the macro projects:</p> <ul style="list-style-type: none"> - Expansion and reinforcement in high voltage; - Service for customers, including the new ones (Cemig Participation); - Reform of the high voltage system; - Operation and maintenance in high voltage; - Assistance to the urban market in medium and low voltage; - Assistance to the rural market in medium and low voltage; - Complementary Program (Cemig Participation) in low and high voltage; - Security of Third Parties (Cemig Participation); - Reform of medium and low voltage networks; - Operation and 	
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CC6.1c Please describe the inherent opportunities that are driven by changes in other climate-related developments.

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Other drivers	The energy generated by biomass has been able to supply not only the electricity consumption in the industrial process, as its surplus has been marketed in the new energy auctions held by the government. According to the 2024 Ten Year Plan for Energy Expansion, released by the Ministry of Mines and Energy of Brazil, the inclusion of cogeneration from biomass has proven to be a competitive alternative in the Brazilian electricity market. However, there is still great potential to be explored. Cemig, through Efficientia, its wholly owned subsidiary, develops cogeneration projects using waste from industrial processes, through performance	Increased demand for existing products / services	3 to 6 years	Direct	Very likely	Low	Less than 1% of the net operating revenue.	<p>The management of this project is carried out by the Efficientia team, whose focus is the optimization of the project results and the compliance with the term and costs stipulated in the budget.</p> <p>Efficientia follows in its projects the fundamental concepts of the PMBOK and of the International Protocol of Measurement and Verification of Results.</p> <p>In this way, this existing structure allows Cemig to be prepared to increase the magnitude of this opportunity in the short term.</p>	<p>Less than R\$ 500,000.00.</p> <p>The costs are annual and associated with the maintenance of the Efficientia team, not including costs of investments in cogeneration projects. These costs will exist whenever this opportunity exists</p>

	contracts, thus identifying an opportunity to increase its revenues in a scenario of adopting carbon pricing instruments.								
Other drivers	In a scenario of increased business investments in energy efficiency, aimed at reducing electricity consumption and reducing GHG emissions, Cemig's subsidiary Efficientia will have a possible increase in demand for its services, among them the implementation of lighting use projects, using LED technology. It should be noted that these projects are executed under performance contracts in which Efficientia makes the necessary resources and recovers its investment through the savings obtained in the project.	Increased demand for existing products / services	1 to 3 years	Direct	Very likely	Low	Less than 1% of the net operating revenue.	<p>The management of this project is carried out by the Efficientia team, whose focus is the optimization of the project results and the compliance with the term and costs stipulated in the budget.</p> <p>Efficientia follows in its projects the fundamental concepts of the PMBOK and of the International Protocol of Measurement and Verification of Results.</p> <p>In this way, this existing structure allows Cemig to be prepared to increase the magnitude of this opportunity in the short term.</p> <p>In 2016, Efficientia presented to the public call of the Energy Efficiency Program 9 energy-efficiency projects</p>	<p>Less than R\$ 500,000.00.</p> <p>The costs are annual and associated with the maintenance of the Efficientia team, not including the costs of investing in energy efficiency projects using LED lighting technology. These costs will exist whenever this opportunity exists.</p>

								related to lighting (most of them using LED technology). Among them, it can be highlighted the modernization of the lighting system of Coração Eucarístico Campus of PUC Minas University, using LED technology; the modernization of the lighting system of Minas Tênis Clube (in Belo Horizonte city) using LED technology, solar pool heating and photovoltaic generation in unit II of Minas Tênis Clube; and the modernization of the lighting system of Santa Casa de Belo Horizonte (a hospital) using LED technology and installation of solar heating in the showers of the building.	
Other drivers	Energy efficiency is an important vector in meeting demand, contributing to energy security, the competitiveness of the economy and the reduction of greenhouse gas	Increased demand for existing products / services	> 6 years	Direct	Very likely	Low	Less than 1% of the net operating revenue.	The management of this project is carried out by the Efficientia team, whose focus is the optimization of the project results and the compliance with the term and costs stipulated in the	Less than R\$ 300,000.00. The costs are annual and associated with the maintenance of the Efficientia

	<p>emissions. In this context of reducing energy demand on the consumer side, Efficientia, a wholly owned subsidiary of Cemig, is placed on the market as a provider of energy solutions, including the deployment of photovoltaic solar energy, in industrial and residential premises. It should be noted that these projects are executed under performance contracts in which Efficientia makes the necessary resources and recovers its investment through the savings obtained in the project, thus identifying an opportunity for Cemig's revenue increase.</p>							<p>budget.</p> <p>Efficientia follows in its projects the fundamental concepts of the PMBOK and of the International Protocol of Measurement and Verification of Results.</p> <p>In this way, this existing structure allows Cemig to be prepared to increase the magnitude of this opportunity in the short term.</p> <p>In 2016, Efficientia implemented photovoltaic solar generation systems, comprising: a generation plant with an installed capacity of 300 kW of generation, producing 466 MWh per year (completed in 2016); project of ten generation plants using photovoltaic panels (implementation in progress, with 90% finalized and completion expected to the end of 2017). This plant has installed capacity of 450 kW of generation,</p>	<p>team, and they do not include costs of investments in photovoltaic energy projects. These costs will exist whenever this opportunity exists.</p>
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								generating 734 MWh per year; and a project of several photovoltaic solar generation units, which are independent of each other, in the residential units and common areas of condominiums (implementation in progress and completion expected to the end of 2017). The plant will have installed capacity of 687 kW for generation, thus generating 1,018 MWh per year.	
Reputation	In a low carbon energy market, Cemig has a good reputation before its stakeholders due to its renewable matrix and its R&D actions on energy alternatives and energy efficiency programs. These initiatives are reflected, for example, in the inclusion of Cemig in the portfolio of ISE (Corporate Sustainability Index of BM&FBovespa) and DJSI (Dow	Increased stock price (market valuation)	1 to 3 years	Direct	Very likely	Medium	It is estimated that the shares of companies that make up the ISE show higher returns and lower volatility. It is estimated, for example, that the market value of companies that are part of the ISE is between 10% and 19% higher than the average value (Rossi, 2009; BM&FBovespa, 2012). Thus, it is possible to affirm that the financial implication of this	One of the methods that Cemig uses to assess its image and reputation before its stakeholders for its action on climate change is through the degree of esteem, admiration, confidence and empathy the general public has about the Company through RepTrak™ Deep Dive methodology, forming the general Pulse reputation index. This methodology was applied in 2016. The	Less than R\$ 1 million. It is associated with the cost of contracting the brand value search. This cost will exist whenever the search is done.

	<p>Jones Sustainability Index). In a scenario of climate change, these characteristics of Cemig can lead to a greater appreciation of the brand.</p>						<p>opportunity taken advantage of by Cemig is approximately R\$ 977 million (equivalent to 10% of 2016 Cemig's market value, R\$ 9.773 billion).</p>	<p>Brand and Reputation Committee of Cemig was formalized in 2011, which analyzes the actions to be implemented to improve the Company's performance in this area. This way of acting allows Cemig to be prepared to increase the probability and magnitude of this opportunity, in the short term.</p> <p>In addition, Cemig responds annually to ISE and DJSI questionnaires.</p>	
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Emissions

CC7. Emissions Methodology

Base year:

2014.

CC7.1 Please provide your base year and base year emissions (Scopes 1 and 2).

Base year	Scope 1 base year emissions (metric tonnes CO2e)	Scope 2 location-based base year emissions (metric tonnes CO2e)	Scope 2 market-based base year emissions (metric tonnes CO2e)
2014	617,717	858,014	Not applicable

CC7.2 Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.

- Brazil GHG Protocol Programme
- IPCC - Guidelines for National Greenhouse Gas Inventories, 2006
- The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

CC7.3 Please give the source for the global warming potentials you have used.

Gas	Reference
CO ₂ (1)	IPCC Fourth Assessment Report: Climate Change 2007 (AR4)
CH ₄ (25)	
N ₂ O (298)	
SF ₆ (22,800)	

CC7.4 Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data at the bottom of this page.

Fuel/Material/Energy	Emission Factor	Unit	Reference
Liquefied petroleum gas (LPG)	2.93248	tCO ₂ e per ton	GHG Brazil Program
Natural gas	0.00207	tCO ₂ e per m ³	GHG Brazil Program
Other: Diesel oil (stationary combustion)	0.00263	tCO ₂ e per liter	GHG Brazil Program
Other: Pure Automotive Gasoline	0.00224	tCO ₂ e per liter	GHG Brazil Program
Other: Anhydrous ethanol (mobile combustion)	0.00154	tCO ₂ e per liter	GHG Brazil Program
Other: B100 biodiesel (stationary and mobile combustion)	0.00235	tCO ₂ e per liter	GHG Brazil Program
Residual fuel oil	2.94666	tCO ₂ e per ton	GHG Brazil Program
Other: Aviation kerosene	3.11330	tCO ₂ e per liter	GHG Brazil Program
Other: Gasoline C (road transportation)	0.00221	tCO ₂ e per liter	GHG Brazil Program
Other: Ethanol (road transportation)	0.00146	tCO ₂ e per liter	GHG Brazil Program
Other: Diesel oil (road transportation)	0.00260	tCO ₂ e per liter	GHG Brazil Program
Other: Gasoline (water transportation)	0.00221	tCO ₂ e per liter	GHG Brazil Program
Other: Air travel	0.09292 (long) 0.08168 (medium) 0.13509 (short)	Other: kgCO ₂ per passenger per km	GHG Brazil Program
Electricity	0.0817	tCO ₂ e per MWh	Ministry of Science, Technology & Innovation (MCTI), Brazil

CC8. Emissions Data

CC8.1 Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory.

Operational control.

CC8.2 Please provide your gross global Scope 1 emissions figures in metric tonnes CO₂e.

15,462 tCO₂e.

CC8.3 Please describe your approach to reporting Scope 2 emissions.

Scope 2, location-based	Scope 2, market-based (if applicable)	Comment
We are reporting a Scope 2, location-based figure	We have no operations where we are able to access electricity supplier emissions factors or residual emissions factors and are unable to report a Scope 2, market-based figure	In Brazil, it is not possible to account for emissions based on the market.

CC8.3a Please provide your gross global Scope 2 emissions figures in metric tonnes CO₂e.

Scope 2, location-based	Scope 2, market-based (if applicable)	Comment
552,805 tCO ₂ e	Not applicable	In Brazil, it is not possible to account for emissions based on the market.

CC8.4 Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No.

CC8.5 Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations.

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
1	+/- 4.2% (More than 2% but less than or equal to 5%)	Data Gaps Data management	The emission sources classified as being "weak certainty" are (i) the consumption of LPG (liquefied petroleum gas) by forklifts and (ii) the use of fertilizers. Both sources have low uncertainty associated with the emission factors used, equal to +/- 5.0%, but have high uncertainty associated with activity data, with values of +/- 15.0%.
2 (location-based)	+/- 5.1% (More than 5% but less than or equal to 10%)	Other: Estimation of the Emission factor	Activity data has associated low uncertainty of +/- 1.0%. The emission factor used has low uncertainty too, equal to +/- 5.0%, and this factor was calculated by the Brazilian Ministry of Science, Technology & Innovation.
2 (market-based)	Not applicable	Not applicable	Not applicable

CC8.6 Please indicate the verification/assurance status that applies to your reported Scope 1 emissions.

Third party verification or assurance process in place.

If Scope 1 emissions have been subject to third party verification or assurance (complete or underway):

CC8.6a Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/ Section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Annual	Complete	Reasonable assurance	GHGEmissionsCemig2016_Verification GHGEmissionsCemig2016_TemplateCDP	The entire document	ISO14064-3	100%

CC8.7 Please indicate the verification/assurance status that applies to at least one of your reported Scope 2 emissions figures.

Third party verification or assurance process in place.

If Scope 2 emissions have been subject to third party verification or assurance (complete or underway):

CC8.7a Please provide further details of the verification/assurance undertaken for your location-based and/or market-based Scope 2 emissions, and attach the relevant statements.

Location-based or market-based figure?	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Location-based	Annual	Complete	Reasonable assurance	GHGEmissionsCemig2016_Verification GHGEmissionsCemig2016_TemplateCDP	The entire document	ISO14064-3	100%

CC8.8 Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2.

Additional data points verified	Comment
No additional data verified	-

CC8.9 Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No, they are not. In 2016, biomass combustion emissions amounted to 2,571 tCO_{2e}, being 1,181 tCO_{2e} in Scope 1 and 1,390 tCO_{2e} in Scope 3.

CC9. Scope 1 Emissions Breakdown

CC9.1 Do you have Scope 1 emissions sources in more than one country?

No.

CC9.2 Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply).

By business division (CC9.2a)

By facility (CC9.2b)

By GHG type (CC9.2c)

By activity (CC9.2d)

CC9.2a Please break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric tonnes CO ₂ e)
Cemig GT	2,360
Cemig D	12,973
Rosal Energia	7
Sá Carvalho	5
Efficientia	4
Usina Térmica do Barreiro S.A.	96
Cemig Telecomunicações S.A.	17

CC9.2c Please break down your total gross global Scope 1 emissions by GHG type.

GHG type	Scope 1 emissions (metric tonnes CO ₂ e)
CO ₂	10,308
CH ₄	30
N ₂ O	240
SF ₆	4,884

CC9.2d Please break down your total gross global Scope 1 emissions by activity.

Activity	Scope 1 emissions (metric tonnes CO ₂ e)
Stationary combustion	223
Mobile combustion	10,302
Fugitive emissions	4,884
Fertilizer consumption	53

CC10. Scope 2 Emissions Breakdown

CC10.1 Do you have Scope 2 emissions sources in more than one country?

No.

CC10.2 Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply).

By business division (CC10.2a)

By facility (CC10.2b)

By activity (CC10.2c)

CC10.2a Please break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based (metric tonnes CO ₂ e)
Cemig GT	527
Cemig D	552,260
Rosal Energia	0
Sá Carvalho	0
Efficientia	0
Usina Térmica do Barreiro S.A.	0
Cemig Telecomunicações S.A.	18

CC10.2c Please break down your total gross global Scope 2 emissions by activity.

Activity	Scope 2, location-based (metric tonnes CO ₂ e)
Purchased electricity	3,566
Technical losses in the system	549,239

CC11. Energy

CC11.1 What percentage of your total operational spend in the reporting year was on energy?

More than 55% but less than or equal to 60%.

CC11.2 Please state how much heat, steam, and cooling in MWh your organization has purchased and consumed during the reporting year.

Energy type	MWh
Heat	0
Steam	0
Cooling	0

CC11.3 Please state how much fuel in MWh your organization has consumed (for energy purposes) during the reporting year.

44,921.36 MWh.

CC11.3a Please complete the table by breaking down the total “Fuel” figure entered above by fuel type.

Fuels	MWh
Other: Biodiesel (B100)	2,093.85
Liquefied petroleum gas (LPG)	352.31
Natural gas	560.71
Other: Automotive gasoline	6,756.58
Aviation kerosene (Jet kerosene)	2,789.80
Residual fuel oil	0
Diesel oil	29,799.35
Other: Anhydrous ethanol	1,729.06
Other: Hydrous ethanol	827.58
Lubricants	12.11

CC11.4 Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor in the market-based Scope 2 figure reported in CC8.3a.

Basis for applying a low carbon emission factor	MWh consumed associated with low carbon electricity, heat, steam or cooling	Emissions factor (in units of metric tonnes CO2e per MWh)	Comment
<p>Other: Generation of low-carbon electricity connected to the electric system, whose plant is owned by the Company, but without certification instruments created for this electricity</p>	0	0	<p>In 2016, 99.98% of the electricity generated by Cemig came from low-carbon plants, among hydroelectric, wind and solar power plants that exported 23,275,239 MWh of green energy to the Brazilian grid. These plants are connected to the grid, but the electricity is not certified with low emissions.</p> <p>This amount of electricity is exported to the electricity system, and is not consumed by the Company, thus generating GHG emissions at Cemig, associated with its consumption. Thus, because this electricity generation does not enter into Cemig's Scope 2 emissions calculations, the value inserted in the second column is equal to zero, and not equal to 23,275,239 MWh of low carbon electricity produced by Cemig in 2016. All electricity consumed by Cemig in the reporting year was accounted for as purchased in the grid, and the emission factor of the Brazilian grid was used in the inventory of GHG emissions.</p> <p>It is important to note that non-low carbon electricity is generated in Igarapé Thermoelectric Plant, powered by fuel oil and in Barreiro Thermoelectric Plant, powered by process gas. However, in 2016, Igarapé plant did not receive an order from ONS for energy generation, and Barreiro plant had a shorter operating time, 713.95 hours in 2016 against 6,641.62 hours in 2015, due to the shutdown of one of the blast furnaces by Vallourec, generating 4,879 MWh in 2016. The Cemig - Vallourec contract for the operation of Barreiro Thermoelectric Plant was terminated in December 2016.</p> <p>The emission factor shown in the next column was zero because the ORS system does not allow text input. In fact, this emission factor is not applicable to Cemig, since the Company reports the scope 2 emissions based on location only.</p>

CC11.5 Please report how much electricity you produce in MWh, and how much electricity you consume in MWh.

Total electricity consumed (MWh)	Consumed electricity that is purchased (MWh)	Total electricity produced (MWh)	Total renewable electricity produced (MWh)	Consumed renewable electricity that is produced by company (MWh)	Comment
43,655.22	43,655.22	23,280,118	23,275,239	0	<p>This amount of renewable electricity produced (23,275,239 MWh) is exported to the grid and is not consumed by the Company, thus not generating GHG emissions at Cemig, associated with its consumption. Thus, because this electricity generation does not enter into Cemig's Scope 2 emissions calculations, the value inserted in the next column is equal to zero, and not equal to 23,75,239 MWh of low carbon electricity produced by Cemig in 2016. All electricity consumed by Cemig in the reporting year (43,655.22 MWh) was accounted for as purchased in the grid, and the emission factor of the Brazilian grid was used in the inventory of GHG emissions.</p>

CC12. Emissions Performance

CC12.1 How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to the previous year?

Decreased.

If emissions have increased, decreased or remained the same overall:

CC12.1a Please identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year.

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
Emission reduction activities	- 0.38%	Decrease	Transport management initiatives found optimization opportunities in logistics, which resulted in the reduction of 858 tCO ₂ e in 2016. In addition, also in 2016, the installation of LUVOS in the Thermal Power Plant of Igarapé allowed the reduction of emissions of 1,906 tCO ₂ e. In addition, the start-up of Renova wind and solar power plants allowed the reduction of Scope 1 emissions to 920 tCO ₂ e. These initiatives are detailed in question CC3.3b, totaling annual emission reductions of 3,684 tCO ₂ e.
Divestment	0%	No change	There was no disposal in Cemig's businesses that changed Scopes 1 and 2 emissions within the limits established for its inventory.
Acquisitions	0%	No change	There was no acquisition in Cemig's businesses that changed Scopes 1 and 2 emissions within the limits established for its inventory.
Mergers	0%	No change	There was no merge in Cemig's businesses that changed Scopes 1 and 2 emissions within the limits established for its inventory.
Change in output	8.81%	Increase	The emissions associated with the operation of Igarapé Thermolectric Plant in 2016 were zero tCO ₂ e, due to the non-dispatch of the power generation plant, in 2015 these emissions were 134,305 tCO ₂ e. The reduction of its operation was responsible for the reduction of 13.79% of Scope 1 + 2 emissions in 2016, compared to 2015. Cemig's electricity production increased from 18,989.539 GWh in 2015 to 23,280.118 GWh in 2016. If all other conditions were maintained unchanged between the two years and assuming a linear increase in emissions with increased electricity generation, this increase in production would lead to an increase in Scope 1 + 2 emissions by 22.59%. These two factors together led to an increase in emissions of 8.81% in 2016 compared to 2015.
Change in methodology	- 28.53%	Decrease	Emission reduction of Scope 2 due to the reduction of the emission factor of the National Interconnected System (SIN), from 0.14244 tCO ₂ /MWh in 2015 to 0.0817 tCO ₂ /MWh in 2016, and Scope 2 emissions in 2015 accounted for 83.11% of Scope 1 + 2 emissions.
Change in boundary	0%	No change	There was no change in the inventory limits for Scopes 1 and 2 emissions.
Change of physical operating conditions	0%	No change	No change in Cemig's physical operating conditions was assessed from the viewpoint of changes in Scopes 1 and 2 emissions in 2016 compared to 2015.
Unidentified	-21.56%	Decrease	21.56% of Scope 1 + 2 emissions in 2016 compared to 2015 cannot be properly screened and therefore have no identified causes - they are small and occasional variations in several sources. All other items in this table together represent 20.10% of the emission reduction, with a total reduction of 41.66%.

Other	0%	No change	No other change in Cemig's operations was assessed from the viewpoint of changes in Scopes 1 and 2 emissions of 2016 compared to 2015.
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CC12.1b Is your emissions performance calculations in CC12.1 and CC12.1a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based.

CC12.2 Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO₂e per unit currency total revenue.

Intensity figure	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator: Unit total revenue	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
0.0000302704	tCO ₂ e	R\$ 18,773,000,000.00	Location-based	33.84%	Decrease	<p>This reduction in emissions per unit of revenue in 2016 compared to 2015 is due, in large part, to the reduction of Scope 1 and 2 emissions in 2016. This emission reduction was mainly due to the reduction of the GHG emission factor of the Brazilian grid and to the non-dispatch of Igarapé Thermoelectric Plant for the generation of energy in 2016, which uses fuel oil as an energy source. On these factors, Cemig has no control, since the dispatch of electricity in the system depends on the decisions of the ONS - Electric System National Operator.</p> <p>Cemig's net operating revenue increased 11.83% in this period.</p> <p>The value for the "Numerator (Combined total gross emissions of Scopes 1 and 2)" column is 568,267 tCO₂e.</p>

CC12.3 Please provide any additional intensity (normalized) metrics that are appropriate to your business operations.

Intensity figure	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
0.0244099705	tCO ₂ e	Other: MWh produced	23,280,118	Location-based	52.42	Decrease	This reduction in Cemig's electricity emissions in 2016 compared to 2015 is due, in large part, to the reduction of Scope 1

							<p>and 2 emissions by 2016. This reduction in emissions was mainly due to the non-dispatch of Igarapé Thermoelectric Plant by the ONS and the reduction of the GHG emission factor of the Brazilian grid. On these factors, Cemig has no control, since the dispatch of electricity in the system depends on the decisions of the ONS - Electric System National Operator.</p> <p>The value for the "Numerator (Combined total gross emissions of Scopes 1 and 2)" column is 568,267 tCO₂e.</p>
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CC13. Emissions Trading

CC13.1 Do you participate in any emissions trading schemes?

No, but we anticipate doing so in the next two years.

And if “Yes” or “No, but we anticipate doing so within the next 2 years”:

CC13.1b What is your strategy for complying with the schemes in which you participate or anticipate participating?

Recent international negotiations have had a major impact on the carbon market. In December 2012, the first commitment period of the Kyoto Protocol was closed and, during the Conference of the Parties, it was decided that the agreement would be renewed, but with a different configuration. The agreement ended up losing a lot of strength, the values of credits dropped substantially and, currently, it is no longer advantageous to register projects in the CDM (Clean Development Mechanism). The unstable international economic time has contributed to the reduction in the productivity of industries, including those that are carbon intensive, and consequently the demand for carbon credits.

Cemig has 11 projects registered under the CDM of the Kyoto Protocol, with a total reduction of 4,867,624 tCO_{2e}. These projects, despite the current uncertainty about the value of their credits, show that Cemig has voluntary and additional actions to reduce emissions, thus preparing for the possible scenario of mandatory participation in an emission marketing scheme.

At the national level, the National Policy on Climate Change (NPCC) establishes as one of its instruments to reduce the GHG emissions in the Brazilian Market for Emissions Reductions (MBRE). This market is not yet a reality, but is expected to materialize in the near future. The NPCC does not set sectoral targets, but states that, in order to achieve the voluntary target, set by Law No. 12.187/2009 to reduce between 36.1% and 38.9% the Brazilian emissions estimated for 2020, actions will be implemented including expansion of the hydroelectric plant supply, the supply of alternative renewable sources, particularly wind farms, small hydroelectric plants and bio-electricity plant, and supply of biofuels and increasing energy efficiency. As a result of COP 21, the following are the new goals assumed by the Brazilian Government: reduce emissions by 37% until 2025 and by 43% until 2030, being 2005 the base year, with some specific commitments associated with the energy sector.

The expansion of electricity generation at Cemig is being strategically planned to increase the installed capacity of low-carbon sources. Cemig invests in the implementation of new hydroelectric plants, both in PCHs (Small Hydroelectric Plants - from 1 MW up to 30 MW) and UHEs (Hydroelectric Plants - with more than 30 MW), and

in wind farms and have spent a lot of effort on the pioneer acquisition of know-how in solar photovoltaic generation of electricity, with the intention of inserting this source in its generation matrix in a significant way. Aiming at a growth model in pursuit of intensifying the use of different renewable sources, Cemig increased its Interest in Renova's capital (reaching 34.15%). Actions taken by Renova to increase opportunities for low-carbon business development:

- contracting of 150.4 MW of installed capacity in the LER/2014 auction, coming from three wind farms (43.5 MW) and four solar farms (106.9 MWp);
- In 2016, the works for phase A of Alto Sertão III, with an installed capacity of 411.1 MW, were at an advanced stage of execution (87% completion). When the project is completed, between 2017 and 2019, Renova will add 411 MW of installed capacity to the Company's portfolio and reach 1.1 GW in operation).
- In January 2016, Renova fully connected the wind farms of the Alto Sertão II complex, commencing the commercial operation of five more farms of the LEN A-3 in 2011. After this stage is finished, it started to have a portfolio in operation of 463.1 MW of installed capacity in wind/solar energy and 190.2 MW in PCHs.
- In addition, Renova has already completed 100% of the assembly of the solar panels and wind towers of the Hybrid project, only waiting for the connection of the substation to energize the farms. In total, 19,200 photovoltaic panels and two wind farms with eight wind turbines were installed. The investment contributed to the project was R\$ 25.7 million with funding from Finep Inovação e Pesquisa. When it is fully operational, the hybrid farm will have 26.4 MW of installed capacity, with 21.6 MW of wind energy and 4.8 MW of solar photovoltaic power, with a generation capacity of 12 MW average.

In 2016, the Center for Sustainability Studies (GVces) of São Paulo Business School of Getulio Vargas Foundation (FGV EAESP) invited Companhia Energética de Minas Gerais, Cemig, to participate in the Emissions Trading System Simulation. This project has the purpose of generating knowledge from the business sector about the operation of an Emissions Trading System (SCE), one of the main economic instruments of greenhouse gas emission mitigation policies already implemented in several countries and jurisdictions.

Since 2013, GVces has been leading the project with the participation of companies from different sectors of the Brazilian economy. In compliance with the project, the

company will have the opportunity to act in the Simulation, based on the rules and parameters defined for the 2017 cycle, operating through an online trading platform of the Rio de Janeiro's Environmental Stock Exchange, BVRio.

GVces will conduct training for participating companies on the concepts related to SCE, as well as on the rules and parameters of the project. In addition, the Center will hold two meetings throughout the year so that companies can exchange experiences about their learning and performance in Simulation. GVces is currently producing bulletins and reports that systematize and foster the learning of companies participating in the project.

Other strategies to prepare for participation in emission trading schemes are listed in the document "Cemig - 10 Climate Initiatives", in which Cemig communicates its commitment to climate change. The most relevant initiatives in this area are electricity generation from renewable sources, implementation of conservation and energy efficiency projects, performance in natural gas activities, investments in new sources of energy (since low carbon), improvement in processes efficiency and reduction of emissions in transport.

CC13.2 Has your organization originated any project-based carbon credits or purchased any within the reporting period?

No³.

³ Cemig has a portfolio of 11 low-carbon electricity generation projects connected to the Brazilian grid, registered under the Clean Development Mechanism (CDM), considering Cemig's plants and plants in which Cemig has a stake. This portfolio has the potential for annual generation of 4,867,624 carbon credits, representing an annual emission reduction of 4,867,624 tCO₂. However, in 2016, these plants did not request carbon credits from the UNFCCC, and therefore, there were no carbon credits generated by Cemig in the reporting year, although the operations of these plants led to reductions in emissions.

CC14. Scope 3 Emissions

CC14.1 Please account for your organization's Scope 3 emissions, disclosing and explaining any exclusions.

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO ₂ e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services	Not relevant, explanation provided	-	-	-	In 2012, Cemig started to quantify emissions from the vehicles of the contractors that provide services of operation and maintenance of distribution services. This item is presented in the "Distribution and transportation downstream" line.
Capital goods	Not evaluated	-	-	-	-
Fuel and energy related activities (not included in Scope 1 or 2)	Not evaluated	-	-	-	The <i>upstream</i> emissions of the fuels and electricity purchased by Cemig were not assessed, nor were the losses of electricity in the transmission and distribution of the electricity consumed by Cemig. In addition, the emissions from the electricity generation purchased by Cemig for resale were not assessed. It is important to note, however, that emissions due to losses in the transmission and distribution systems of electricity produced by Cemig were accounted for in Scope 2. In addition, emissions from the transportation of fossil fuels (oil) from the refineries to the Cemig thermal plant were accounted for. This transportation takes place by tank trucks, and have been counted in "upstream transportation and distribution".
Upstream transportation and distribution	Relevant, calculated	547.54	(i) Types and sources of data used, emission factors and GWP values (global warming potential of gas): total	100%	-

			<p>distance traveled by third-party freight trucks and by trucks that transported fuel to Igarapé Thermoelectric Plant. The emission factors of the fuel consumed (diesel) and GWP values were obtained through the GHG Protocol Brazil calculation tool.</p> <p>ii) Description of the quality of the reported emissions data: data were obtained directly from Cemig's suppliers of all vehicles that carried cargo to Cemig in 2016.</p> <p>iii) Description of methodologies, assumptions and allocation methods used to calculate emissions: calculations were made using the GHG Protocol Brazil tool (version 2017.3).</p>		
Waste generated in operations	Not relevant, explanation provided	-	-	-	<p>Reverse Logistics and the final destination of waste are made by an Environmental Management System (EMS) Level 1 certified area, which receives the waste properly identified, separated and conditioned by the areas that generated them. In the period from January to December 2016, 46.1 thousand tons of industrial waste was sent to environmentally adequate destination: 98.7% were disposed of or recycled, 0.7% regenerated, and 0.6% were co-processed, incinerated or disposed of in an industrial landfill.</p> <p>Alienated waste consists mainly of cables and wires, transformer scrap, metal scrap, meter scrap, poles, crosses, trimmings and waste wood, i.e., inert materials.</p>
Business travel	Relevant, calculated	846.25	<p>(i) Types and sources of data used, emission factors and GWP (global warming potential gas) values: total distance data traveled by Cemig employees for business air travel was used. The emission factors and the GWP values were obtained through the GHG Protocol Brazil tool.</p> <p>ii) Description of the quality of the reported emissions data: the distances of all business air travel made by all Cemig employees in 2016 were computed.</p> <p>iii) Description of the methodologies, assumptions and allocation methods used to calculate emissions: calculations were made using the GHG Protocol</p>	100%	-

			Brazil tool (version 2017.3); in addition, data from the website www.gcmmap.com were used to calculate the distances between airports.		
Employee commuting	Relevant, calculated	590.71	<p>(i) Types and sources of data used, emission factors and GWP (global warming potential gas) values: the total distance traveled by employee using buses was used. The emission factors and the GWP values were obtained through the GHG Protocol Brazil tool.</p> <p>ii) Description of the quality of the reported emissions data: the displacement distances of all buses of Cemig employees in 2016, as well as the type of vehicle used in this commuting (home - work) were computed.</p> <p>iii) Description of methodologies, assumptions and allocation methods used to calculate emissions: calculations were made using the GHG Protocol Brazil tool (version 2017.3).</p>	100%	-
Upstream leased assets	Not relevant, explanation provided	-	-	-	There are no assets leased by Cemig.
Downstream transportation and distribution	Relevant, calculated	13,240.95	<p>(i) Types and sources of data used, emission factors and GWP (global warming potential of gas) values: total fuel consumption data were used by vehicles of contractors providing electricity distribution services by Cemig. The emission factors and the GWP values were obtained through the GHG Protocol Brazil tool.</p> <p>ii) Description of the quality of the reported emissions data: the data were provided by the contractors, whose vehicles provide services of operation and maintenance of the electricity distribution network 21 of the 25 contractors provided data to calculate the GHG emissions by this source.</p> <p>iii) Description of methodologies, assumptions and allocation methods used to calculate emissions: calculations were made using the GHG Protocol Brazil tool (version 2017.3).</p>	100%	<p>In 2012, Cemig started to quantify emissions from the vehicles of the contractors that provide services of operation and maintenance of distribution services.</p> <p>In 2016, out of 25 companies with current contracts that provide this type of service, 21 responded with information, which is equivalent to 84% of the total. It is important to emphasize that the participation and the contribution with information by the contractors are voluntary.</p>
Processing of sold products	Not relevant, explanation provided	-	-	-	The product sold by Cemig (electricity) is not processed as an intermediate product for the production of final consumer goods; the electricity is an input into productive processes, not an intermediary good. Therefore, this source of emissions is not applicable to Cemig.

Use of sold products	Relevant, calculated	6,049,885	<p>i) Types and sources of data used, emission factors and GWP (gas global warming potential) values: data on the consumption of electricity generated by Cemig by final consumers were used. The emission factor of the Brazilian grid and the GWP values were obtained through the GHG Protocol Brazil tool.</p> <p>ii) Description of the quality of the reported emissions data: the electricity consumption data by its customers are precisely monitored by the Company.</p> <p>iii) Description of methodologies, assumptions and allocation methods used to calculate emissions: calculations were made using the GHG Protocol Brazil tool (version 2017.3).</p>	100%	The main source of Scope 3 emissions of Cemig is the consumption of electricity commercialized by the Company by final consumers, whether they are industrial, commercial or residential. As the energy sold by Cemig is part of the National Interconnected System, the emission factor of this system was used to calculate these emissions.
End of life treatment of sold products	Not relevant, explanation provided	-	-	-	The product sold by Cemig (electricity) does not have an end-of-life treatment, as it does not generate waste to be treated or disposed of. Therefore, this source is not applicable to Cemig.
Downstream leased assets	Not relevant, explanation provided	-	-	-	Cemig does not lease assets. Therefore, this source of emissions is not applicable to the Company.
Franchises	Not relevant, explanation provided	-	-	-	Cemig has no franchises. Therefore, this source of emissions is not applicable to the Company.
Investments	Not relevant, explanation provided	-	-	-	Investments do not imply an increase in emissions.
Other (upstream)	-	-	-	-	-
Other (downstream)	-	-	-	-	-

CC14.2 Please indicate the verification/assurance status that applies to your reported Scope 3 emissions.

Third party verification or assurance process in place.

If Scope 3 emissions have been subject to third party verification or assurance (complete or underway):

CC14.2a Please provide further details of the verification/assurance undertaken, and attach the relevant statements.

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/ Section reference	Relevant standard	Proportion of reported Scope 3 emissions verified (%)
Annual process	Complete	Reasonable assurance	GHGEmissionsCemig2016_Verification GHGEmissionsCemig2016_TemplateCDP	The entire document	ISO14064-3	100%

CC14.3 Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?

Yes.

If yes:

CC14.3a Please identify the reasons for any change in your Scope 3 emissions and for each of them specify how your emissions compare to the previous year.

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Upstream transportation and distribution	Change in methodology	8.09%	Increase	The distance traveled by third-party trucks for cargo transportation increased from 687,840 km in 2015 to 750,772 km in 2016. The distance traveled by trucks transporting fuel to Igarapé Thermoelectric Plant decreased from 66,510 km in 2015 to zero km in 2016. This reduction was due to the non-dispatch of Igarapé Thermoelectric Plant for power generation in 2016.
Employee commuting	Other: Change in production	0.31%	Increase	Cemig made an analysis of the routes traveled by buses in Belo Horizonte (urban diesel buses), which resulted in an increase of 0.82% in the displacement of employees in this category of transportation, which is equivalent to 1,604 km more traveled in 2016, compared to 2015. This category of transportation represented 38.13% of emissions from the Scope 3 source "Displacement of employees", in 2016. Therefore, this reduction of distance traveled led to a reduction of total GHG emissions in the source "Displacement of employees", of 0.31% in 2016.
Employee commuting	Emission reduction activities	5.84%	Decrease	In the transport of employees in the inland part of the State of Minas Gerais by diesel bus, there was a reduction in the distance traveled of 56,768 km in 2016 compared to 2015, representing a reduction of GHG emissions in this transportation category of 14.3%. This category of transportation represented 43.3% of emissions from the Scope 3 source "Displacement of employees", in 2016. Therefore, this reduction of distance traveled led to a reduction of total GHG emissions in the source "Displacement of employees", of 7.73% in 2016. In the displacement of employees in light-duty vehicles, there was an increase in the distance

				traveled of 66,435 km in 2016 compared to 2015, representing an increase in GHG emissions in this category of transportation of 14.4%. This category of transportation represented 18.57% of emissions from the Scope 3 source "Displacement of employees" in 2016. Therefore, this increase in distance traveled has led to an increase in total GHG emissions in the source "Displacement of employees" of 1.9% in 2016.
Downstream transportation and distribution	Others: greater adherence in the data reporting	3.03%	Increase	Data provided by the contractors responsible for downstream transportation indicated a decrease of 1.88% in gasoline consumption and increase by 52.68% in ethanol consumption and 4.68% in diesel consumption. The main reason that led to this increase in consumption in Cemig's suppliers is due to the changes in Cemig's demand for the services provided by these Companies. It is noteworthy that the reporting of these data is voluntary and the compliance of invited contractors in 2016 was 84%. This increase in fuel consumption led to a 3.03% increase in Scope 3 emissions in transportation and distribution (<i>downstream</i>).
Business travel	Emission reduction activities	25.64%	Decrease	The distance traveled in 2016 in air travel business segments was reduced by 30.47% compared to 2015. This led to a reduction of 25.64% in emissions of this category.
Use of sold products	Other: Change in production	37.08%	Decrease	The energy generated and sold by Cemig was 4.19% lower in 2016 compared to 2015 (from 77,289,000 MWh to 74,050,000 MWh). There was also a reduction of the National Interconnected System (SIN) emission factor from 0.14244 tCO ₂ /MWh in 2015 to 0.0817 tCO ₂ /MWh in 2016, which meant that the same amount of consumption of electricity generated by Cemig in those two periods represented lower emissions by consumers of that electricity in 2016 compared to 2015. The combination of these factors led to a reduction of 37.08% in emissions in 2016 compared to 2015. Emissions from electricity consumption by Cemig customers accounted for 99.75% of the Company's Scope 3 emissions in 2016.

CC14.4 Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply).

- Yes, our suppliers
- Yes, our customers
- Yes, other partners in the value chain
- No, we do not engage

If “Yes, our customers” or “Yes, other partners in the value chain” is ticked:

CC14.4.a Please give details of methods of engagement, your strategy for prioritizing engagements and measures of success.

Cemig seeks to engage its customers in reducing energy consumption in order to reduce GHG emissions associated with this consumption. This engagement is made through its Energy Efficiency Program (PEE) which uses resources from the Aneel's (Brazilian National Electric Energy Agency) program of the same name. The specific legislation in course regulated by Aneel, determines the application by the distributor of a minimum percentage of net operating revenue in energy efficiency projects. In addition, the distribution company must annually make a Public Call for Projects, with the society having the opportunity to present proposals to be executed with this energy efficiency resource. The scoring criteria for selecting the proposals presented in the Public Call are shown in the Table 1.

Table 1 – Scoring criteria for projects in the PEE (Energy Efficiency Program) Public Call

Item	Criteria	Minimum limit	Maximum limit
A	Cost-benefit ratio	30	40
A1	Proportional cost-benefit ratio	75%	75%
A2	Ordered cost-benefit ratio	25%	25%
B	Weight of equipment investment in total cost	5	10
C	Direct impact on energy savings and on reduction of peak demand	10	20
C1	Impact on energy savings	50%	70%
C2	Impact on reduction of the peak demand	30%	50%
D	Quality of the project	8	15
D1	Overall quality of the project	20%	30%
D2	Basis of the project	20%	30%
D3	Consistence of the schedule presented	20%	30%
D4	Strategy of M&V (Measurement and Verification) presented	30%	40%
E	Capacity for overcoming market barriers and multiplier effect	0 (zero)	5
E1	Effectiveness in breaking down market barriers	0%	100%
E2	Promotes behaviors of energy efficient use	0%	100%
E3	Intended to sectors with more relevant barriers	0%	100%
F	Experience in similar projects	10	20
F1	Experience in the proposed end uses	30%	40%
F2	Experience in PEE (Energy Efficiency Program)	20%	30%
F3	EVO CMVP Certification – Certified Measurement & Verification Professional trained by Efficiency Valuation Organization	20%	30%
F4	Other relevant certifications	20%	30%
G	Counterpart	10	20
H	Incentive to end uses	5	10
I	Educational actions and disclosure	5	10

Additional information about the scoring criteria can be accessed at:

http://www.cemig.com.br/pt-br/A_Cemig_e_o_Futuro/sustentabilidade/nossos_programas/Eficiencia_Energetica/Documents/CriteriosChamada_Rev12016.pdf

The projects selected by Cemig based on these criteria mentioned above are implemented. Cemig works at two different manners, based on the type of customer to which the project is associated with.

1- Energy Efficiency Program (Smart Energy Program) – It serves low-income residential customers and philanthropic institutions by replacing obsolete and energy-intensive consumption equipment, such as light bulbs, refrigerators and showers, by more efficient and economical ones, or from the installation of photovoltaic panels, among other consumption reduction measures. In this way Cemig promotes the reduction of GHG emissions associated with the electricity consumption of these customers.

2- Energy efficiency services provided by Efficientia (ESCO) - Cemig's wholly-owned subsidiary. It serves clients of the industrial and commercial segments through the preparation and implementation of innovative projects that offer energy solutions focused on end-use improvement services: lighting, ambient air conditioning, compressed air, motors, pumping, etc. In addition, Efficientia offers consulting in the implementation of ISO 50001 - Energy Management System and develops cogeneration projects, using waste from industrial processes, through performance contracts.

Strategies for prioritizing engagements:

The selection of projects is made by Cemig based on the criteria described above. Cemig engages its costumers on both fronts as it identifies opportunities for the presentation of energy efficiency projects and provides the necessary technical support in the preparation of these projects.

Measuring success:

1- Energy Efficiency Program (Smart Energy Program) - The success of Cemig's PEE as a method of customer engagement is measured by the amount invested in the energy efficiency projects developed under this Program. Since 2008 to date, approximately R\$ 435 million have been invested in the implementation of new technologies and strengthening the culture of rational energy use through the awareness and use of more efficient equipment. In 2016, for example, Cemig made available R\$ 35 million for the Public Call and invested R\$ 23.3 million in energy efficiency projects.

In addition, the energy efficiency gains (MWh/year) and the GHG emission reductions (tCO₂e/year) promoted by the projects are used as indicators of the success of this engagement method. The Table 2 shows some projects carried out in 2016.

For additional information about the Smart Energy Program, please access:

http://www.cemig.com.br/pt-br/A_Cemig_e_o_Futuro/sustentabilidade/nossos_programas/Eficiencia_Energetica/Paginas/Default.aspx

Table 2 – Projects carried out in 2016

Action	Target public	Units	Investment in 2016 (R\$)	Energy saved (MWh/year)	Reduction in peak demand (kW)	CO ₂ avoided (tons)
Replacement of electric showers with solar water heating	Low-income housing	2,624	593,670.96	1,303	1,033	116
Educational project for low and medium voltage consumers	Large electricity consumers	283	715,551.35	0	0	0
Replacement of electric showers with solar water heating	Long-term homes for the elderly	18	369,532.66	282	124	25
Replacement of electric showers with solar water heating	Public hospitals and philanthropic entities	11	2,272,046.95	517	1,332	46
Replacement of obsolete lighting with high-efficiency systems	Public hospitals and philanthropic entities	9	304,631.58	902	192	80
Replacement of autoclaves	Public hospitals and philanthropic entities	1	39,956.38	63	18	6
Replacement of lighting system	Commerce and services	1	0.00	1,745	603	155
Optimization of cooling system	Industry	1	0.00	3,480	0	310
Projects in progress	For-profit consumers	0	13,502,840.63	0	0	0
Projects in progress	Nonprofit consumers	0	4,766,853.8	0	0	0
Management plan			737,092.07			
TOTAL			23,302,176.38	8,292	3,302	738

2- Energy efficiency services provided by Efficientia (ESCO) - The energy efficiency gains (MWh/year) and the GHG emissions reductions (tCO₂e/year) promoted by the projects are used as indicators of the success of this engagement method.

Contracts signed in 2016 are expected to reduce emissions by 147.18 tCO₂/year and lead to an estimated saving in electricity consumption of 4,220.23 MWh/year. In order to calculate emission reductions, the emission factor of the National Electric System (SIN) for 2016 was used, calculated for GHG inventories by the Brazil's Ministry of Science, Technology and Innovation (MCTI), multiplied by the amount of electricity saved.

Some of the cogeneration projects implemented by Efficientia - Among the cogeneration projects developed, Bem Brasil Alimentos, a company located in Perdizes, a city in Triângulo Mineiro Region (Minas Gerais State), started the operation of its cogeneration power and steam plant, from biomass, in November 2016 and had investment of R\$ 30 million in resources of the PEE. The thermal power plant from biomass is responsible for meeting more than 60% of the energy demand of the Bem Brasil plant, with installed capacity of 9 MW for the cogeneration plant and the average generation power of 7.5 MW. Production is estimated at 54,000 MWh/year, amount enough to meet the annual consumption of a city of 138 thousand people. The project will also avoid the emission of 7,200 tCO₂/year, equivalent to the emission of approximately 10,000 passenger cars.

The cogeneration power and steam plant, from biomass, of the Industria de Rações Patense, located in Itaúna, Minas Gerais State, generated approximately 7,000 MWh in 2016. The thermal power plant from biomass is responsible for supplying almost 70% of the energy demand of the Patense plant. The installed capacity for the cogeneration plant is 3 MW. The investment of R\$ 16 million was made possible with resources from the PEE.

Additional information about Efficientia and its projects can be obtained at: www.efficientia.com.br

Supplement for Electricity Utility Companies

The information below refers to emissions from stationary sources for electricity generation and not to Scope 1 as a whole.

EU0 Reference dates

EU0.1 Please enter the dates for the periods for which you will be providing data. The years given as column headings in subsequent tables correspond to the “year ending” dates selected below. It is requested that you report emissions for: (i) the current reporting year; (ii) one other year of historical data (i.e. before the current reporting year); and, (iii) one year of forecasted data (beyond 2021 if possible).

Year ending	Start date	End date
2009	01/01/2009	12/31/2009
2016	01/01/2016	12/31/2016
2024	01/01/2024	12/31/2024

EU1 Global totals by year

EU1.1 In each column, please give a total figure for all the countries for which you will be providing data for the “year ending” periods that you selected in answer to EU0.1.

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO ₂ e)	Emissions intensity (metric tonnes CO ₂ e/MWh)
2009	6,610	35,333	21,921	0.0006
2016	7,862	23,280	15,462	0.0007
2024	9,503	41,104	134,305	0.0033

EU2 Individual country profiles

EU 2.1 Please select the energy sources/fuels that you use to generate electricity in this country.

- Coal - hard
- Lignite
- Oil & Gas (excluding CCGT)
- CCGT
- Nuclear
- Waste

(X) Hydro

(X) Other renewables

(X) Other

Please complete the following table for the “year ending” periods that you selected in answer to EU0.1 for Oil & gas (excluding CCGT).

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO ₂ e)	Emissions intensity (metric tonnes CO ₂ e/MWh)
2009	131	0.588	21,921	37.2806
2016	131	0	0	0
2024	131	168	134,305	0.7994

Please complete the following table for the “year ending” periods that you selected in answer to EU0.1 for Hydro.

Year ending	Nameplate capacity (MW)	Production (GWh)
2009	6,410	35,040
2016	7,668	23,172
2024	8,942	39,166

Please complete the following table for the “year ending” periods that you selected in answer to EU0.1 for other renewable sources (wind and solar).

Year ending	Nameplate capacity (MW)	Production (GWh)
2009	16	20
2016	50	103
2024	430	1,770

Please complete the following table for the “year ending” periods that you selected in answer to EU0.1 for other sources (blast furnace gases, tar and other waste gases generated in steel industrial processes).

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO ₂ e)	Emissions intensity (metric tonnes CO ₂ e/MWh)
2009	53	273	0	0
2016	13 ⁴	5	96	0.0197
2024	0	0	0	0

Please enter total figures for this country for the “year ending” periods that you selected in answer to EU0.1.

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO ₂ e)	Emissions intensity (metric tonnes CO ₂ e/MWh)
2009	6,610	35,333	21,921	0.0006
2016	7,862	23,280	15,462	0.0007
2024	9,503	41,104	134,305	0.0033

EU3 Renewable electricity sourcing regulations

EU 3.1 In certain countries, e.g. Italy, the UK, the USA, electricity suppliers are required by regulation to incorporate a certain amount of renewable electricity in their energy mix. Is your organization subject to such regulatory requirements?

No.

EU4 Renewable electricity development

EU 4.1 Please give the contribution of renewable electricity to your organization’s EBITDA (Earnings Before Interest, Tax, Depreciation and Amortization) in the current reporting year in either monetary terms or as a percentage.

Please give:	Monetary figure	%	Comment
Renewable electricity’s contribution to EBITDA	-	25	In 2016, EBITDA in the Generation segment was much lower than the historical average, so the % of its contribution to the holding consolidated value was also lower.

⁴ As of 2017, Usina Termelétrica Barreiro S.A. will no longer enter into the Greenhouse Gas Inventory Scope of Cemig, since the agreement with Vallourec was terminated in December 2016. This fact will directly impact the installed capacity of the Cemig group process gas plants.

EU 4.2 Please give the projected contribution of renewable electricity to your organization's EBITDA at a given point in the future in either monetary terms or as a percentage.

Please give:	Monetary figure	%	Year ending	Comment
Renewable electricity's contribution to EBITDA	-	40%	2021	It is expected to maintain the fraction of renewables in the generation mix of the Organization.

EU4.3 Please give the capital expenditure (Capex) planned for the development of renewable electricity capacity in monetary terms and as a percentage of total Capex planned for power generation in the current Capex plan.

Please give:	Monetary figure	%	End year of Capex plan	Comment
Capex planned for renewable electricity development	R\$ 4,356,000,000.00	39%	2020	In the current Capex plan, 2016-2020, substantial investments are foreseen in the Generation business, in which 98% of electricity is generated by renewable sources. Source: APIMEC Presentation - Guidance 2016

Sign Off

CC15.1 Please provide the following information for the person that has signed off (approved) your CDP climate change response.

Name	Job title	Corresponding job category
Bernardo Afonso Salomão Alvarenga	Chief Executive Officer	Management Director

Annex 1 - Verification Statement of Cemig's GHG Inventory



STATEMENT

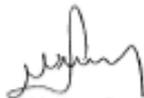
Bureau Veritas Certification, established on Avenida Alfredo Egídio de Souza Aranha 100, 4th floor, tower C, Vila Cruzeiro, São Paulo, SP, entered with the CNPJ (National Register of Legal Entities) under number 72.368.012/0002-85, states for appropriate action that CEMIG – Companhia Energética de Minas Gerais, established on Av. Barbacena, 1200 – 17th floor, wing A1, Belo Horizonte, Minas Gerais, entered in the CNPJ (National Register of Legal Entities) under number 17.155.730/0001-64, in the city of Belo Horizonte, Minas Gerais, is authorized to publish in all their titles and websites the words of the Statement of Conformity according to the wording below: "Bureau Veritas Certification, based on the processes and procedures described in its Verification Report, adopting a reasonable level of confidence, states that the Inventory of Greenhouse Gases - year inventoried 2016 of CEMIG – Companhia Energética de Minas Gerais, is precise, reliable, free of errors or distortions and has an equitable representation of GHG data and information related to the reference period for the defined scope; it was prepared in accordance with the specifications of NBR ISO 14064-1 and with Brazilian Program GHG Protocol and verified according to specifications of 'NBR ISO 14064:2007 part 3 – Specification with guidance for validation and verification of greenhouse gas assertions; and specifications of Brazilian Program GHG Protocol.'

Verified emissions:

Scopes 1, 2, and 3 (in tCO₂e)

Approach	Scope 1	Scope 2	Scope 3	Total
Operational Control	15,462	552,805	6,065,110	6,633,377

São Paulo, April 25th, 2017


Bureau Veritas Certification





The Directors

BVQI do Brasil Sociedade Certificadora Ltda.
Avenida Alfredo Egídio de Souza Aranha, 100, 4º andar, Torre C, Vila Cruzeiro.
São Paulo, SP. 04726-170
CNPJ nº 72.368.012/0002-65

May 17th, 2017

To whom it may concern,

The purpose of this letter is to clarify matters set out in the assurance report. It is not an assurance report and is not a substitute for the assurance report.

This letter and the verifier's assurance report, including the opinion(s), are addressed to you and are solely for your benefit in accordance with the terms of the contract. We consent to the release of this letter by you to CDP in order to satisfy the terms of CDP disclosure requirements but without accepting or assuming any responsibility or liability on our part to CDP or to any other party who may have access to this letter or our assurance report.

In accordance with our engagement contract with you dated February 24th, 2017, number BR.1297042 and for the avoidance of doubt, we confirm that our GHG Emission Inventory Verification Report, # Brasil-ver/BR.1297042, report to you dated April 22nd, 2017 (the "assurance report") incorporated the following matters:

1. Boundaries of the reporting company covered by the assurance report and any known exclusions. ^{*1}

^{*1} Optional field

CDP verification template 2017

Company operations in: Brazil, comprising the following companies:
Cemig Geração e Transmissão S.A. (Cemig GT), Cemig Distribuição S.A. (Cemig D), Rosal Energia S.A., Sá Carvalho S.A., Efficientia S.A., Cemig PCH S.A., Horizontes Energia S.A., Usina Térmica do Barreiro S.A., Cemig Telecomunicações S.A., Cemig Geração Camargos S.A., Cemig Geração Itutinga S.A., Cemig Geração Salto Grande S.A., Cemig Geração Três Marias S.A., Cemig Geração Leste S.A., Cemig Geração Oeste S.A., Cemig Geração Sul S.A.

Exclusions:

There are no known exclusions for Scope 1 and 2 GHG emissions.

2. Emissions data verified - broken down by Scope 1, Scope 2 and Scope 3 categories with figures given; option to include other relevant data that has been verified with figures.

Scope 1: 15,462 tCO₂e
Scope 2: 552,805 tCO₂e
Scope 3: 6,065,110 tCO₂e

3. Period covered (e.g. '12 months to DD MM YY')

01/01/2016 to 12/31/2016

4. Verification standard used

ISO 14064-3: Specification with guidance for the validation and verification of greenhouse gas assertions.

5. Assurance opinion (incl. level of assurance and any qualifications)

Based on the process and procedures conducted, and according to the Bureau Veritas Certification verification statement dated of April 25th, 2017, there is no evidence that the GHG assertion

- is not materially correct and is not a fair representation of GHG data and information, and
- has not been prepared in accordance with the related International Standard on GHG quantification, monitoring and reporting, or to relevant national standards or practices,
- has been prepared in accordance with the related International Standard on GHG.

6. Verification provider and accreditations (if relevant)

BVQI do Brasil Sociedade Certificadora Ltda.

CDP verification template 2017

7. Lead verifier name and relevant accreditations/professional membership (if relevant)

Antonio Daraya – GHG Lead Verifier.
Rubens Ferreira – Verifier.

8. This letter should be prepared on the verifier's letterhead or include the signature of the lead verifier (or authorized signatory/ organization responsible for issuing the assurance report / statement) in the box below.



Antonio Daraya – GHG Lead Verifier