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LIGHT SA - Climate Change 2018

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

The Light Group comprises Light S.A., the holding company, headquartered in the city of Rio de Janeiro, its wholly-owned subsidiaries (directly controlled companies), and equity interest held in other companies. The Light Group explores electricity services, including the generation, transmission, commercialization, and distribution segments, as well as associated services. In 2017, net revenue totaled R\$10.7 billion. This document describes the policies and practices related to the holding company and wholly-owned subsidiaries, simply referred to as Light in this report.

As of December 31, 2017, Light's corporate structure comprised: Controlling Group (52.13%) and free float (47.87%), of which 9.39% is held by BNDESPar and 38.49% is held by minority shareholders. The Controlling Group comprises the following companies: Companhia Energética de Minas Gerais (Cemig) (26.06%), Luce Empreendimentos e Participações S.A. (LEPSA) (13.03%), and Rio Minas Energia S.A. (RME) (13.03%).

Directly Controlled Companies

Light Serviços de Eletricidade S.A. Its main activity is the distribution of electricity in a concession area that encompasses 31 cities of the State of Rio de Janeiro, including the capital city. In 2017, the consumption of all 4.5 million customers totaled 25,846 GWh.

Light Energia S.A. Its main activities are the study, planning, construction, operation, and exploration of energy generation, transmission, and commercialization systems, as well as associated services. It encompasses the Pereira Passos, Nilo Peçanha, Ilha dos Pombos, Santa Branca, and Fontes Nova power plants, with a total installed capacity of 855 MW. Light Energia holds equity interest in the following subsidiaries and jointly-controlled companies:

- Lajes Energia S.A. It is responsible for the implementation, operation, maintenance, and commercial exploration of the Lajes small hydroelectric power plant, with a nominal



renewable-source power generation facilities including hydro, wind and solar power generation facilities with a total firm capacity of 627 MW and a current installed capacity of 190 MW;

- Central Eólica São Judas Tadeu Ltda. This company is pre-operational. Its main activities will include the production and commercialization of electricity from a wind power plant, located in the State of Ceará, with a nominal capacity of 18 MW;
- Central Eólica Fontainha Ltda. This company is pre-operational. Its main activities will include the production and commercialization of electricity from a wind power plant, located in the State of Ceará, with a nominal capacity of 16 MW.

Light Esco Prestação de Serviços S.A. Its main activity is the purchase, sale, import, and export of electricity, thermal energy, gases, and industrial utilities, as well as the provision of operating and maintenance services to industrial and commercial customers of a number of sectors.

Light Com Comercializadora de Energia S.A. Its main activities include short- and long-term commercialization of energy (purchase and sale) in the free market and the provision of consulting services to customers of a number of sectors.

Light Soluções em Eletricidade Ltda. Its main activity is the provision of services to low voltage customers, including the assembly, refurbishment, and maintenance of installations in general.

Itaocara Energia Ltda. This company is pre-operational. Its main activities will include the development of projects, construction, installation, operation, and exploration of generation power plants. It holds equity interest in the Consortium of the Itaocara hydroelectric power plant and in the following jointly-controlled company:

- Usina Hidrelétrica Itaocara S.A. This company is pre-operational. It was established to construct the Itaocara hydroelectric power plant and it holds the concession for use of public asset for exploration of the Itaocara I hydroelectric power plant.

Instituto Light para o Desenvolvimento Urbano e Social. Its purpose is to participate in social and cultural projects, aimed at the economic and social development of cities

C0.2



	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Row 1	January 1 2017	December 31 2017	No	<Not Applicable>
Row 2	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Row 3	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Row 4	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>

C0.3

(C0.3) Select the countries/regions for which you will be supplying data.

Brazil

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

BRL

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.

Operational control

C-EU0.7

(C-EU0.7) Which part of the electric utilities value chain does your organization operate in? Select all that apply.

Row 1



Distribution

Other divisions

Please select

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

No

C1.1c

(C1.1c) Why is there no board-level oversight of climate-related issues and what are your plans to change this in the future?

	Primary reason	Board-level oversight of climate-related issues will be introduced within the next two years	Please explain
Row 1	Under our Corporate Governance Handbook, matters related to sustainability are addressed by our Governance & Sustainability Committee. The scope of sustainability addresses issues related to climate change, but is not specified in its attributions.	Yes, we plan to do so within the next two years	In 2018, we draw up a short, medium and long-term action plan to address sustainability issues. It includes several actions related to climate change. So we should incorporate the aspect in a specific way in the coming years. Even climate change is one of the material themes raised in our study of materiality.

C1.2

(C1.2) Below board-level, provide the highest-level management position(s) or committee(s) with responsibility for climate-related issues.



(Manager)	related risks and opportunities
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C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored.

The Investor Relations and Sustainability Division is linked to the Superintendency of Investor Relations and Investor Relations, which in turn reports to the Company's DRI. In the case of Light, currently the position is accumulated by the Chief Executive Officer. Issues related to sustainability, including issues related to climate change, are brought to the attention of the Director. When necessary, they are submitted to the analysis of the Governance and Sustainability Committee, composed only of Directors, for presentation to the Board of Directors.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

Yes

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues.

Who is entitled to benefit from these incentives?

Environment/Sustainability manager

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

In 2018, we included as a target the realization of a study to quantify the carbon price for Light. To achieve the goal, documentary analysis, defined methodology and price



C2. Risks and opportunities

C2.1

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

	From (years)	To (years)	Comment
Short-term	1	2	
Medium-term	2	5	
Long-term	5	10	

C2.2

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

C2.2a

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Annually	3 to 6 years	Our Risk Matrix is reviewed annually to assess the controls in place, identify emerging risks and ensure risk impacts and probabilities are measured for each process.



(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

The first stage in risk management is identifying risk factors based on our Reference Formo, which lists our most significant risks. Risk factors are then drilled down into Corporate Risks, and for each Corporate Risk an individual assessment of the level of risk is conducted and this is then input into a Corporate Risk Matrix.

This process, done within our Integrated Risk Management Framework, is based on the methodology and procedures recommended by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) and Enterprise Risk Management (ERM). The methodology comprises:

- Five levels of impact and probability: critical, high, medium, low and very low.
- Three classifications:

Financial risks – unexpected events which could affect our liquidity and/or undermine our capital structure.

Operating risks – unexpected actions and events, such as human error, equipment and system failure and actions by external agents which could cause substantial financial and reputational damages to the Company, affecting our customers and our longterm performance

Compliance risks – legal and regulatory issues and changes in the political environment which could affect the electric utility industry. More specifically, regulatory changes could create additional legal contingencies for the Company.

Specific Questions :

- How climate-related risks are identified and assessed at a company level (e.g. reputational risk can impact the full corporation): Assessed in the Compliance Risk

- How climate-related risks are identified and assessed at an asset level (e.g. physical impacts can affect individual facilities). Climate change risks are more related to Light Energia and the availability of water volume to produce the amount of energy sold in contracts.

- The process you have in place for assessing the potential size and scope of identified risks: Detailed in <http://ri.light.com.br/ptb/7248/75582.pdf>

- The process by which your organization determines the relative significance of climate-



- The definitions of risk terminologies used (or references to existing risk classification frameworks utilized by your company); Three classifications: Financial, Operational, Compliance.
- How your organization defines substantive financial or strategic impact on your business: risks related to Light Energia and the availability of water volume to produce the amount of energy sold in contracts is described but not deeply analyzed

C2.2c

(C2.2c) Which of the following risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Our Company has two departments that analyses climate change: Sustainability and HSE. On top of that, we have a specialized consultancy company that help us with climate change issues, any change in legislation will be analyse in an advance. On top of that our company has already a GHG Inventory and internal targets
Emerging regulation	Relevant, always included	Our company has adopted a proactive position, participating in forums that discuss sector targets together with government authorities. In Brazil, electric energy is mostly supplied by renewable sources; still, unrealistic targets could impact the sector's viability.
Technology	Relevant, always included	Light Energia only produces renewable energy.
Legal	Relevant, always included	Our company is responsible for any loss resulting for inadequate electricity service provided. In some situation insurance may not provide all losses. Losses including climate change increase o rain pattern that floods the system as stated in http://ri.light.com.br/ptb/7248/75582.pdf
Market	Relevant, not included	Light Energia only produces renewable energy. There is more opportunity than risks in this issue
Reputation	Relevant, not included	
Acute physical	Relevant, always included	The management of hydrological risk involves monitoring indicators and scenarios, as well as adapt quickly to possible negative consequences of risk. The metrics for monitoring involving reservoir levels, environmental setting, indicators of climate monitoring and assessment of the political context.
Chronic physical	Relevant, always included	The management of hydrological risk involves monitoring indicators and scenarios, as well as adapt quickly to possible negative consequences of risk. The metrics for monitoring involving reservoir levels, environmental setting, indicators of climate monitoring and assessment of the political context.
Upstream	Not evaluated	



Downstream	Not evaluated	
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C2.2d

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

Managing risks is part of the Risk committee framework. The committee analyses the following risks

- **Legal:** Regarding Light Energia Dam, and the population living nearby that could be affected;
- **Market:** Light only has renewable energy generation

Acute: Is managed as mentioned in the public risk assessment. Further details can not be provided <http://ri.light.com.br/ptb/7248/75582.pdf>

Current and emerging regulation: This risk is managed directly by our company environmental department that has a consultancy contract with a climate change consultancy company (Ambio: www.ambiopar.com.br).

Every year a review of all legislation is provided and initiatives are related in a Gap Analysis report.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

**Risk type**

Transition risk

Primary climate-related risk driver

Policy and legal: Enhanced emissions-reporting obligations

Type of financial impact driver

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

Rio de Janeiro has a state legislation on climate change, Law 5690, published in April 2010. This law led to a regulation by the Rio de Janeiro environmental agency (INEA). Resolution 64 and 65. The first demand the elaboration of GHG emissions inventory the second one demand the presentation of a mitigation plan in order to receive an environmental operation license. The Renewable electricity production and Electricity Distribution are not included in those legislations yet. There is a small possibility in changing the legislation to include distribution and CHP plants

Time horizon

Short-term

Likelihood

Unlikely

Magnitude of impact

Low

Potential financial impact

0

Explanation of financial impact

Reporting cost are not considered once the company already reports its GHG emission

Management method

Our Company has two departments that analyse climate change: Sustainability and HSE. On top of that, we have a specialized consultancy company that helps us with climate change issues, any change in legislation will be analysed in advance. On top of that our company has already a GHG Inventory and internal targets

Cost of management

0

Comment**Identifier**

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

**Primary climate-related risk driver**

Policy and legal: Mandates on and regulation of existing products and services

Type of financial impact driver

Technology: Reduced demand for products and services

Company- specific description

Brazil NDC has 10% of energy efficiency in the electrical sector this includes our operation

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Medium

Potential financial impact

40000000

Explanation of financial impact

The financial impact described is related to the current legislation that obligates electricity distribution companies to invest 0,5% of the operating profit in energy efficiency. Light invest that amount every year

Management method

Our company has an energy efficiency department that invest every year 0,5% in projects according to Aneel regulation 556.

Cost of management

672000

Comment

Costs are related to the ammont for each project and the ammonut invested last year.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Mandates on and regulation of existing products and services

Type of financial impact driver

**Company- specific description**

Impact of related policies such as building regulations specifying more energy-efficient buildings; Rio de Janeiro Decreto n° 35745 that incentivates green building.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

Medium-low

Potential financial impact

1

Explanation of financial impact

Not evaluated

Management method

Brazil is the fourth country in numbers of certificated green building. All national legislation up to the moment are it incentivize more greenbuilding such as Decreto n° 35745 are already in place and they only create incentives not obligations. The possible impacts are already happening

Cost of management**Comment****Identifier**

Risk 4

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Physical risk

Primary climate-related risk driver

Chronic: Rising mean temperatures

Type of financial impact driver

Other, please specify (theft of energy)

Company- specific description

Increases in temperature have immediate impact on energy consumption, commercial losses, delinquency and may cause overloads. Our company has performed a study that indicates that there is a correlation between increase in temperature and increase in commercial losses. This indicates that people that steal electricity uses it more insensibly in warm whether

**Likelihood**

Very likely

Magnitude of impact

Medium-high

Potential financial impact

271

Explanation of financial impact

the current cost on controled areas.

Management method

We use temperature as an input variable in our predictions of daily energy keeping an updated database of minimum, average and maximum of the municipality of Rio de Janeiro temperature. Light developed the R&D Project "Influence of Climate Condition on Light SESA's Electricity Market ", aiming to investigate, analyze and develop an innovative methodology to relate the climate (or more specifically the thermal sensation of the various regions that are part of Light's concession area) to the billed energy and electric power load. The study is based on historical data of those regions. The rise in temperatures and a consequent increase in energy consumption is directly related to increased losses and delinquency. Light incorporates into its analysis the ratio of the temperature rise and the use of air conditioning, with the increase in commercial losses. To mitigate the problem, Light invests in the modernization of the electric grid, energy efficiency projects and client relationships. Reduction strategy for non-technical losses • Daily inspections in conventional and centralized metering areas SMC/APZ); • Inspections on medium and lowvoltage customers triggered by MeteringControl Center (CCM) alarms; • Initiatives focused on large gated communities; • Market discipline initiatives; • Smart Grids: Implementation of automated systems with remotely monitored meters; • Strategy for approaching communities for maintenance work: approaching community associations a

Cost of management

1

Comment**Identifier**

Risk 5

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Physical risk

Primary climate-related risk driver

Chronic: Changes in precipitation patterns and extreme variability in weather patterns

Type of financial impact driver

**Company- specific description**

Change in precipitation pattern can be considered an important impact due to the fact that light has energy production with Hydro power plants. Extreme events in precipitation can reduce energy supply as it is occurring in these two years. On top of that, floods can increase maintenance costs in below ground electricity distribution nets.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

High

Potential financial impact

0

Explanation of financial impact

Information not to be disclosed

Management method

The management of hydrological risk involves monitoring indicators and scenarios, as well as adapt quickly to possible negative consequences of risk. The metrics for monitoring involving reservoir levels, environmental setting, indicators of climate monitoring and assessment of the political context.

Cost of management

0

Comment**C2.4**

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier



Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Type of financial impact driver

Returns on investment in low-emission technology

Company- specific description

Renewable energy: the legislation governing the renewable energy market in Brazil is still incipient but there is incentive to costumer that have a demand above 500kW to purchase renewable energy with a discount on the transmission tariff. Light invests in renewable energy and develops projects in R & D on renewable energy. Dispite the legislation the Brazilian NDC states: "in the energy sector, achieving 45% of renewables in the energy mix by 2030, including: - expanding the use of renewable energy sources other than hydropower in the total energy mix to between 28% and 33% by 2030; - expanding the use of non-fossil fuel energy sources domestically, increasing the share of renewables (other than hydropower) in the power supply to at least 23% by 2030, including by raising the share of wind, biomass and solar; - achieving 10% efficiency gains in the electricity sector by 2030".

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium

Potential financial impact

1

Explanation of financial impact

not estimated

Strategy to realize opportunity

The company participates directly and seeks to influence regulations and standards through official channels and specific meetings with ANEEL (National Electric Energy Agency). Light also composes ABRADDEE (Brazilian Association of Electricity Distributors) an organization that has political power to influence the federal government. One way to maximize the opportunities in these segments is with the diversification of the activities of the company with investments in renewable energy. Another way to diversify is to invest in projects for energy efficiency and electrical engineering services.

Cost to realize opportunity

1



Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Type of financial impact driver

Reputational benefits resulting in increased demand for goods/services

Company- specific description

Light only has renewable energy assets

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Low

Potential financial impact

Explanation of financial impact

not estimated

Strategy to realize opportunity

Cost to realize opportunity

Comment

C2.5

(C2.5) Describe where and how the identified risks and opportunities have impacted your business.

	Impact	Description
Products and services	Impacted	Risks of energy production in case of reducing rain pattern, and contracts already signed. Risk of reduce electricity consumption due to greenbuilding initiative Brazil has already faced drought and energy prices have been impacted. This increase theft of energy and electricity production in Hydros



and/or value chain	suppliers, facilities, or product lines	
Adaptation and mitigation activities	Impacted for some suppliers, facilities, or product lines	Brazil has already faced drought and energy prices have been impacted. This increase theft of energy and electricity production in Hydros
Investment in R&D	Impacted	We have research and investment programme to reduce SF6 emission reduction
Operations	Not evaluated	not evaluated
Other, please specify	Not evaluated	

C2.6

(C2.6) Describe where and how the identified risks and opportunities have factored into your financial planning process.

	Relevance	Description
Revenues	Impacted	
Operating costs	Please select	
Capital expenditures / capital allocation	Please select	
Acquisitions and divestments	Please select	
Access to capital	Please select	
Assets	Please select	
Liabilities	Please select	
Other	Please select	

C3. Business Strategy

C3.1

(C3.1) Are climate-related issues integrated into your business strategy?

Yes

**(C3.1 a) Does your organization use climate-related scenario analysis to inform your business strategy?**

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

C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b)

(C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.

No, we do not have a low-carbon transition plan

C3.1 c**(C3.1 c) Explain how climate-related issues are integrated into your business objectives and strategy.**

Aiming to contribute to the agenda relating to climate change and environmental preservation, Light has published the document "Commitments of Light for the environment and the climate," which lists the commitments and actions implemented by Light. The document shows guidelines that integrate and complement the Environmental Policy of Light and is aligned with the company's strategy.

These commitments are divided into six themes:

1. Prioritize the generation and distribution of energy obtained from renewable and clean sources
2. Being a pioneer in the development and diffusion of technologies that promote benefits for the climate and environment and reduce electricity waste
3. Conserving biodiversity of our reservoirs and its surroundings
4. Reduce direct and indirect GHG emissions
5. Undertake and promote the reuse and recycling of solid waste
6. Adopt and disseminate practical preservation of water quality and reduction of waste

Climate change is considered in defining the Light Energia's strategy (generation division), with respect to hydrological risk. Climate change is also considered in defining the Light SESA's strategy (distribution and supply division) with respect to temperature increase.

In the case of Light Energia is a long-term action because it involves the modernization of the monitoring of rainfall and flow rates in rivers system, which will allow better monitoring



In the case of Light SESA is a short-term action because the rise in temperatures and the resulting increase in energy consumption are directly related to the increase in commercial losses and delinquencies. This action aims to reduce the level of commercial losses of Light, one of the highest in the nation. Consequently, the strategy was to invest in the modernization of the electric grid, energy efficiency projects and client relationships. The modernization of the electric grid will also benefit the power supply quality indicators, such as DEC (Equivalent Outage Duration per Consumer) and FEC (Equivalent Outage Frequency per Consumer).

C3.1g

(C3.1g) Why does your organization not use climate-related scenario analysis to inform your business strategy?

Because it is scenario is under development

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Absolute target

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Scope

Scope 1



% reduction from base year

Base year

2014

Start year

2017

Base year emissions covered by target (metric tons CO2e)

37994

Target year

2017

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

% achieved (emissions)

0

Target status

Replaced

Please explain

Our target is a year on year rolling target. To improve our emission reduction commitment we implemented a composting project. This changed emissions from Scope 3 to Scope 1 leading to the non-achievement of the target. Despite that fact our emissions decreased as a result from our SF6 reduction project

C4.2

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a



	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation		
To be implemented*		
Implementation commenced*		
Implemented*	2	10157
Not to be implemented		

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Activity type

Fugitive emissions reductions

Description of activity

Other, please specify (sf6 leakage reduction)

Estimated annual CO2e savings (metric tonnes CO2e)

10157

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

307055

Investment required (unit currency – as specified in CC0.4)

Payback period

Please select

Estimated lifetime of the initiative

11-15 years

Comment

Light SESA has 11 power stations and three of them are the responsible for the majority of low-pressure problems occurrences. The company began to change some equipment in 2011 and aims to retrofit all the stations by 2020. The substitution of old o-rings for new EPDM (Ethylene Propylene Diene Monomer) o-rings that are more resistant to

**Activity type**

Process emissions reductions

Description of activity

Process materials selection

Estimated annual CO2e savings (metric tonnes CO2e)

463

Scope

Scope 3

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

0

Investment required (unit currency – as specified in CC0.4)

0

Payback period

>25 years

Estimated lifetime of the initiative

3-5 years

Comment

Light Recicla Project, is done under an Energy Efficiency program legislated by a national law.

C4.3c**(C4.3c) What methods do you use to drive investment in emissions reduction activities?**

Method	Comment
Dedicated budget for energy efficiency	We invest 0,5% off profits in Energy Efficiency projects
Dedicated budget for low-carbon product R&D	We invest 0,5% off profits in R&D

C4.5



C4.5a

(C4.5a) 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

Product

Description of product/Group of products

Our company only generates renewable energy to the grid. So all electricity sold is low carbon product

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify (renewable energy to the grid)

% revenue from low carbon product(s) in the reporting year

Comment

C-EU4.6

(C-EU4.6) Describe your organization's efforts to reduce methane emissions from your electricity generation activities.

Our company has a composting plant to compost water plants that grows in ours dams, that in the absence of the project activity would be generating methane in landfills

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).



January 1 2014

Base year end

December 31 2014

Base year emissions (metric tons CO2e)

529527

Comment

Scope 2 (location-based)

Base year start

January 1 2014

Base year end

December 31 2014

Base year emissions (metric tons CO2e)

404493

Comment

Scope 2 (market-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

C5.2

(C5.2) Select 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

C6. Emissions data

C6.1

**Gross global Scope 1 emissions (metric tons CO2e)**

40420

End-year of reporting period

<Not Applicable>

Comment**Row 2****Gross global Scope 1 emissions (metric tons CO2e)**

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment

<Not Applicable>

Row 3**Gross global Scope 1 emissions (metric tons CO2e)**

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment

<Not Applicable>

Row 4**Gross global Scope 1 emissions (metric tons CO2e)**

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment

<Not Applicable>

C6.2**(C6.2) Describe your organization's approach to reporting Scope 2 emissions.****Row 1****Scope 2, location-based**

We are reporting a Scope 2, location-based figure

**Comment**

We have operations where we are able to access electricity supplier emission factors or residual emissions factors, but are unable to report a Scope 2, market-based figure

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?**Row 1****Scope 2, location-based**

225105

Scope 2, market-based (if applicable)

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment**Row 2****Scope 2, location-based**

<Not Applicable>

Scope 2, market-based (if applicable)

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment

<Not Applicable>

Row 3**Scope 2, location-based**

<Not Applicable>

Scope 2, market-based (if applicable)

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment

<Not Applicable>



<Not Applicable>

Scope 2, market-based (if applicable)

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment

<Not Applicable>

C6.4

(C6.4) 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

C6.5

(C6.5) Account for your organization's Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

Emissions calculation methodology

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Explanation

Capital goods

Evaluation status

Metric tonnes CO2e

Emissions calculation methodology

**Explanation****Fuel-and-energy-related activities (not included in Scope 1 or 2)****Evaluation status**

Metric tonnes CO2e

Emissions calculation methodology

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Explanation**Upstream transportation and distribution****Evaluation status**

Relevant, calculated

Metric tonnes CO2e

2289

Emissions calculation methodology

GHG Protocol Scope 3 Guidance, including service providers that do maintenance in our distribution grid using trucks to access the lines.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Explanation

All data are provided by the suppliers

Waste generated in operations**Evaluation status**

Relevant, calculated

Metric tonnes CO2e

43324

Emissions calculation methodology

GHG Protocol Scope 3 Guidance, first order decay model by EPA to calculate emissions

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Explanation

All data are provided by the suppliers

Business travel

**Metric tonnes CO2e**

261

Emissions calculation methodology

ICAO guidelines

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Explanation**Employee commuting****Evaluation status****Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation****Upstream leased assets****Evaluation status****Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation****Downstream transportation and distribution****Evaluation status****Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation****Processing of sold products****Evaluation status**



Percentage of emissions calculated using data obtained from suppliers or value chain partners

Explanation

Use of sold products

Evaluation status

Metric tonnes CO2e

Emissions calculation methodology

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Explanation

End of life treatment of sold products

Evaluation status

Metric tonnes CO2e

Emissions calculation methodology

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Explanation

Downstream leased assets

Evaluation status

Metric tonnes CO2e

Emissions calculation methodology

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Explanation

Franchises

Evaluation status

Metric tonnes CO2e

Emissions calculation methodology

Percentage of emissions calculated using data obtained from suppliers or value chain partners

**Evaluation status****Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation****Other (upstream)****Evaluation status****Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation****Other (downstream)****Evaluation status****Metric tonnes CO2e****Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation****C6.7**

(C6.7) Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

Yes

C6.7a

(C6.7a) Provide the emissions from biologically sequestered carbon relevant to your organization in metric tons CO2.



C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.0000121

Metric numerator (Gross global combined Scope 1 and 2 emissions)

265525

Metric denominator

billion (currency) funds under management

Metric denominator: Unit total

17701905

Scope 2 figure used

Location-based

% change from previous year

0

Direction of change

No change

Reason for change

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization have greenhouse gas emissions other than carbon dioxide?

Yes

C7.1a



Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	32334	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	144	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	2.45	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	0.29	IPCC Fifth Assessment Report (AR5 – 100 year)
SF6	0.12	IPCC Fifth Assessment Report (AR5 – 100 year)

C-EU7.1b

(C-EU7.1b) Break down your total gross global Scope 1 emissions from electric utilities value chain activities by greenhouse gas type.

	Gross Scope 1 CO2 emissions (metric tons CO2)	Gross Scope 1 methane emissions (metric tons CH4)	Gross Scope 1 SF6 emissions (metric tons SF6)	Gross Scope 1 emissions (metric tons CO2e)	Comment
Fugitives	0	0	0	4449	emission in Light energia the utilitie company is 0.002
Combustion (Electric utilities)	0	0	0	0	Our utilities are Hydropower
Combustion (Gas utilities)	27044	0.74	0	27652	A CHP Plant istaled in Coca cola unit, that belogs to Light Esco
Combustion (Other)					
Emissions not elsewhere classified					

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Brazil	40420

**(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.**

By business division

C7.3a**(C7.3a) Break down your total gross global Scope 1 emissions by business division.**

Business division	Scope 1 emissions (metric ton CO2e)
Light SESA	7728
Light Energia	4449
Light ESCO	28242

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4**(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.**

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions, metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility generation activities	4449	<Not Applicable>	Light Energia has Hydropower plants
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

**(C7.5) Break down your total gross global Scope 2 emissions by country/region.**

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
Brazil	225105		10837	

C7.6**(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.**

By business division

C7.6a**(C7.6a) Break down your total gross global Scope 2 emissions by business division.**

Business division	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Light SESA	221045	
Light Energia	4058	
Light ESCO	1.3	

C7.9**(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?**

Decreased

C7.9a**(C7.9a) 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.**



Change in renewable energy consumption		<Not Applicable>		
Other emissions reduction activities	4196	Decreased	1	Difference between both years, due to the reduction in technical loss
Divestment		<Not Applicable>		
Acquisitions		<Not Applicable>		
Mergers		<Not Applicable>		
Change in output		<Not Applicable>		
Change in methodology		<Not Applicable>		
Change in boundary		<Not Applicable>		
Change in physical operating conditions		<Not Applicable>		
Unidentified		<Not Applicable>		
Other		<Not Applicable>		

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

C8.2



	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	53.7	225577	225523
Consumption of purchased or acquired electricity	<Not Applicable>	107056	10484	117540
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>		<Not Applicable>	
Total energy consumption	<Not Applicable>	107109.7	236061	343063

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application



electricity	
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Bioethanol

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

53.7

MWh fuel consumed for the self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

Fuels (excluding feedstocks)

Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

13125

MWh fuel consumed for the self-generation of electricity

4859

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam



<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

Fuels (excluding feedstocks)

Natural Gas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

205079

MWh fuel consumed for the self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

205079

C8.2d

(C8.2d) List the average emission factors of the fuels reported in C8.2c.

Acetylene

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Agricultural Waste

Emission factor

<Not Applicable>

**Emission factor source**

<Not Applicable>

Comment

<Not Applicable>

Alternative Kiln Fuel (Wastes)**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Animal Fat**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Animal/Bone Meal**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Anthracite Coal**Emission factor**

<Not Applicable>

**Emission factor source**

<Not Applicable>

Comment

<Not Applicable>

Asphalt**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Aviation Gasoline**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Bagasse**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Bamboo**Emission factor**

<Not Applicable>

**Emission factor source**

<Not Applicable>

Comment

<Not Applicable>

Basic Oxygen Furnace Gas (LD Gas)**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Biodiesel**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Biodiesel Tallow**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Biodiesel Waste Cooking Oil**Emission factor**

<Not Applicable>

**Emission factor source**

<Not Applicable>

Comment

<Not Applicable>

Bioethanol**Emission factor**

0.01

Unit

metric tons CO2e per metric ton

Emission factor source

Fleet

Comment**Biogas****Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Biogasoline**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Biomass Municipal Waste**Emission factor**

<Not Applicable>

Unit



<Not Applicable>

Comment

<Not Applicable>

Biomethane

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Bitumen

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Bituminous Coal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Black Liquor

Emission factor

<Not Applicable>

Unit



<Not Applicable>

Comment

<Not Applicable>

Blast Furnace Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Brown Coal Briquettes (BKB)

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Burning Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Butane

Emission factor

<Not Applicable>

Unit



<Not Applicable>

Comment

<Not Applicable>

Butylene

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Charcoal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Coal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Coal Tar

Emission factor

<Not Applicable>

Unit



<Not Applicable>

Comment

<Not Applicable>

Coke

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Coke Oven Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Coking Coal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Compressed Natural Gas (CNG)

Emission factor

<Not Applicable>

Unit



<Not Applicable>

Comment

<Not Applicable>

Condensate

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Crude Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Crude Oil Extra Heavy

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Crude Oil Heavy

Emission factor

<Not Applicable>

Unit



<Not Applicable>

Comment

<Not Applicable>

Crude Oil Light**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Diesel**Emission factor**

3.138

Unit

metric tons CO2e per metric ton

Emission factor source

Generators

Comment**Distillate Oil****Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Dried Sewage Sludge**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

**Comment**

<Not Applicable>

Ethane**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Ethylene**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Fuel Gas**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Fuel Oil Number 1**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

**Comment**

<Not Applicable>

Fuel Oil Number 2**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Fuel Oil Number 4**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Fuel Oil Number 5**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Fuel Oil Number 6**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

**Comment**

<Not Applicable>

Gas Coke**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Gas Oil**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Gas Works Gas**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

GCI Coal**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

**Comment**

<Not Applicable>

General Municipal Waste**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Grass**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Hardwood**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Heavy Gas Oil**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

**Comment**

<Not Applicable>

Hydrogen**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Industrial Wastes**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Isobutane**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Isobutylene**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

**Comment**

<Not Applicable>

Jet Gasoline**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Jet Kerosene**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Kerosene**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Landfill Gas**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

**Comment**

<Not Applicable>

Light Distillate**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Lignite Coal**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Liquefied Natural Gas (LNG)**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Liquefied Petroleum Gas (LPG)**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

**Comment**

<Not Applicable>

Liquid Biofuel**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Lubricants**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Marine Fuel Oil**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Marine Gas Oil**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

**Comment**

<Not Applicable>

Metallurgical Coal**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Methane**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Motor Gasoline**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Naphtha**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

**Comment**

<Not Applicable>

Natural Gas**Emission factor**

2.1

Unit

kg CO2e per m3

Emission factor source

CHP Power Plant

Comment**Natural Gas Liquids (NGL)****Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Natural Gasoline**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Non-Biomass Municipal Waste**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Non-Biomass Waste

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Oil Sands

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Oil Shale

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Orimulsion

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Other Petroleum Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Paraffin Waxes

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Patent Fuel

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

PCI Coal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Peat

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Pentanes Plus

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Petrochemical Feedstocks

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Petrol

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Petroleum Coke

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Petroleum Products

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Pitch

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Plastics

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Primary Solid Biomass

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Propane Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Propane Liquid

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Propylene

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Refinery Feedstocks

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Refinery Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Refinery Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Residual Fuel Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Road Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

SBP

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Shale Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Sludge Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Softwood

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Solid Biomass Waste

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Special Naphtha

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Still Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Straw

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Subbituminous Coal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Sulphite Lyes

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Tar

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Tar Sands

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Thermal Coal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Thermal Coal Commercial

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Thermal Coal Domestic

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Thermal Coal Industrial

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Tires

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Town Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Unfinished Oils

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Vegetable Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Waste Oils

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Waste Paper and Card

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Waste Plastics

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Waste Tires

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

White Spirit

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Wood

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Wood Chips

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

Wood Logs

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Wood Pellets

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Wood Waste

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Other

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source



<Not Applicable>

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	4193006	117541	4193006	107056
Heat				
Steam	2.38			
Cooling				

C-EU8.2e

(C-EU8.2e) For your electric utility activities, provide a breakdown of your total power plant capacity, generation, and related emissions during the reporting year by source.

Coal – hard

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO₂e)

Scope 1 emissions intensity (metric tons CO₂e per GWh)

Comment

Lignite

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO₂e)

Scope 1 emissions intensity (metric tons CO₂e per GWh)

**Nameplate capacity (MW)****Gross electricity generation (GWh)****Net electricity generation (GWh)****Absolute scope 1 emissions (metric tons CO2e)****Scope 1 emissions intensity (metric tons CO2e per GWh)****Comment****Gas****Nameplate capacity (MW)**

12.03

Gross electricity generation (GWh)

73

Net electricity generation (GWh)

71.7

Absolute scope 1 emissions (metric tons CO2e)

28242

Scope 1 emissions intensity (metric tons CO2e per GWh)

382

Comment**Biomass****Nameplate capacity (MW)****Gross electricity generation (GWh)****Net electricity generation (GWh)****Absolute scope 1 emissions (metric tons CO2e)****Scope 1 emissions intensity (metric tons CO2e per GWh)****Comment****Waste (non-biomass)****Nameplate capacity (MW)****Gross electricity generation (GWh)****Net electricity generation (GWh)****Absolute scope 1 emissions (metric tons CO2e)**



Nuclear

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

Geothermal

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

Absolute scope 1 emissions (metric tons CO2e)

Scope 1 emissions intensity (metric tons CO2e per GWh)

Comment

Hydroelectric

Nameplate capacity (MW)

855

Gross electricity generation (GWh)

4119.19

Net electricity generation (GWh)

4075.46

Absolute scope 1 emissions (metric tons CO2e)

4449

Scope 1 emissions intensity (metric tons CO2e per GWh)

2

Comment

Wind

Nameplate capacity (MW)

Gross electricity generation (GWh)

Net electricity generation (GWh)

**Comment****Solar****Nameplate capacity (MW)****Gross electricity generation (GWh)****Net electricity generation (GWh)****Absolute scope 1 emissions (metric tons CO2e)****Scope 1 emissions intensity (metric tons CO2e per GWh)****Comment****Other renewable****Nameplate capacity (MW)****Gross electricity generation (GWh)****Net electricity generation (GWh)****Absolute scope 1 emissions (metric tons CO2e)****Scope 1 emissions intensity (metric tons CO2e per GWh)****Comment****Other non-renewable****Nameplate capacity (MW)****Gross electricity generation (GWh)****Net electricity generation (GWh)****Absolute scope 1 emissions (metric tons CO2e)****Scope 1 emissions intensity (metric tons CO2e per GWh)****Comment****Total****Nameplate capacity (MW)****Gross electricity generation (GWh)****Net electricity generation (GWh)****Absolute scope 1 emissions (metric tons CO2e)****Scope 1 emissions intensity (metric tons CO2e per GWh)**



C8.2f

(C8.2f) Provide details on the electricity, heat, steam and/or cooling amounts that were accounted for at a low-carbon emission factor in the market-based Scope 2 figure reported in C6.3.

C-EU8.4

(C-EU8.4) Does your electric utility organization have a global transmission and distribution business?

Yes

C-EU8.4a

(C-EU8.4a) Disclose the following information about your global transmission and distribution business.

Country/Region

Brazil

Voltage level

Distribution (low voltage)

Annual load (GWh)

36508

Scope 2 emissions (basis)

Location-based

Scope 2 emissions (metric tons CO2e)

210227

Annual energy losses (% of annual load)

9.1

Length of network (km)

77684

Number of connections

Area covered (km2)

11000

**Country/region**

Brazil

Voltage level

Transmission (high voltage)

Annual load (GWh)

36508

Scope 2 emissions (basis)

Location-based

Scope 2 emissions (metric tons CO2e)

4041

Annual energy losses (% of annual load)

9

Length of network (km)

2026

Number of connections**Area covered (km2)****Comment**

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

Description

Waste

Metric value

4198

Metric numerator

tons of waste

Metric denominator (intensity metric only)

tCO2e

% change from previous year



Decreased

Please explain

C-EU9.5a

(C-EU9.5a) Break down, by source, your total planned CAPEX in your current CAPEX plan for power generation.

Primary power generation source	CAPEX planned for power generation from this source	Percentage of total CAPEX planned for power generation	End year of CAPEX plan	Comment
Hydroelectric	50220	5.3	2018	
Wind	50	0	2018	0.0005

C-EU9.5b

(C-EU9.5b) Break down your total planned CAPEX in your current CAPEX plan for products and services (e.g. smart grids, digitalization, etc.).

Products and services	Description of product/service	CAPEX planned for product/service	Percentage of total CAPEX planned products and services	End of year CAPEX plan
Distributed generation	Distribution of electricity	373398	74	2018
Please select				

C-CO9.6/C-EU9.6/C-OG9.6

(C-CO9.6/C-EU9.6/C-OG9.6) Disclose your investments in low-carbon research and development (R&D), equipment, products, and services.

Investment start date

January 1 2017

Investment end date

December 31 2017

Investment area

R&D

**Investment maturity**

Applied research and development

Investment figure

6700000

Low-carbon investment percentage

Please explain

C10. Verification**C10.1****(C10.1) Indicate the verification/assurance status that applies to your reported emissions.**

	Verification/assurance status
Scope 1	No third-party verification or assurance
Scope 2 (location-based or market-based)	No third-party verification or assurance
Scope 3	No third-party verification or assurance

C10.2**(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?**

No, but we are actively considering verifying within the next two years

C11. Carbon pricing**C11.1**



C11.1d

(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?

Our company already has determined internal carbon price.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Change internal behavior
Drive low-carbon investment

GHG Scope

Scope 1
Scope 2

Application

Actual price(s) used (Currency /metric ton)

0.95

Variance of price(s) used



Shadow price

Impact & implication

Considering a minimum price for carbon, based on the price defined by Cemig, a negative impact was verified throughout the year. In this way, it is necessary to refine the analysis by defining a price that considers the Marginal Cost of Abatement (CMA), which indicates how much the company spends (and will spend) to reduce one ton of CO₂ in the margin. A full assessment of the abatement costs of each option (reduction) available will give the company an overview of its potential to reduce emissions and related costs. By ranking all the available options (considering the potential for horizontal axis reductions and the associated costs on the vertical axis) the company will have its defined marginal cost abatement curve (CCMA) defined. In calculating the CMA it is possible to consider mitigation actions already carried out by the Company that are not measured, such as actions aimed at reducing losses, the main source of Light's emission. And other actions will be prospected. This more detailed analysis will be carried out throughout the year and should be completed before the publication of the Annual Report 2018. In addition to the impact in absolute terms, the impact on the Company's Ebitda should also be considered.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

% total procurement spend (direct and indirect)



Impact of engagement, including measures of success

Comment

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Other

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

preencher com participação em foruns, abradee, etc

C12.3f

(C12.3f) 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?

C12.4

(C12.4) 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

In voluntary sustainability report

Status

Complete

Attach the document

[CDP-climate-change-changes-document.pdf](#)



C14. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C14.1

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Sustainability Specialist	Other, please specify (Specialist)

Submit your response

In which language are you submitting your response?

English

Please state the main reason why you are declining to respond to your Customers

Prefer to work directly with customer, not through a third party

Please confirm below

I have read and accept the applicable Terms



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