

**Module: Introduction****Page: Introduction****CC0.1****Introduction**

Please give a general description and introduction to your organization.

Celsia is an electricity company that offers an innovative energy portfolio for cities, businesses and homes. We operate in Colombia, Panama and Costa Rica and have a generation capacity of 2,387 MW through 27 hydroelectric, thermal, solar and wind power plants: 21 plants are hydraulic, five plants are thermal and one wind power plant. We provide electricity to more than 586,000 customers in southwestern Colombia.

Through Epsa E.S.P. (Empresa de Energía del Pacífico S.A. E.S.P.), we operate in Colombia in the departments of Valle del Cauca, Cauca and Tolima with 16 hydroelectric power plants. Additionally, in Valle del Cauca, we have 79 substations, 20,246 km of distribution networks and 274 km of transmission networks, through which we provide electricity to 586,000 customers in 39 municipalities in Valle del Cauca and one municipality in Chocó (San José del Palmar).

For customer service in these two departments, we have a network of 28 service centers, 1,434 points of sale and 49 telephone service points. In the municipalities of Tuluá and San Pedro, Valle del Cauca, we have more than 57,000 clients through Cetsa E.S.P. (Compañía de Electricidad de Tuluá S.A. E.S.P.). Throughout the Organization, 1,550 employees experience Celsia's innovation and service culture, and make the sustainability principles a reality in all stages of the business.

Our market share in Colombia is 50.01%, made up by the Empresa de Energía del Pacífico S.A. E.S.P., EPSA, which is present in the four stages of the electricity business: generation, transmission, distribution, and commercialization. The company is located in the Valle del Cauca, Tolima, Cauca, and Chocó departments. EPSA is also the main shareholder of the Compañía de Electricidad de Tuluá S.A. E.S.P., CETSA, that provides its services to the municipality of Tuluá.

As part of its transmission and distribution businesses, EPSA has 12 substations, and 274 kilometers of network ( $\geq 220$  kV), as well as 74 substations and 20,246 kilometers of network ( $\leq 220$  kV). As part of its commercialization area, it services more than 586,000 clients in the southwest region of Colombia, and has developed an important network of commercial offices, payment offices, and telephone service points. We are present in Panama and Costa Rica through seven electric power plants that use water, thermal, and wind technologies.

Our work is focused on excellence, striving for results that generate value through time for all of our stakeholders in an ethical and transparent fashion, balancing economic profitability, development, and social inclusion, as well as with respect for the environment.

The redefinition of the Company's strategy is decisive when looking into the future. We seek superior results for the Company, and for the people and entities with which it is engaged.

Following the work guided by the Board of Directors and the Steering Committee, Celsia is working on a new client-focused strategic approach.

Given that asset management is now our main line of business, we have found new opportunities in the face of market needs, which are represented in the identification of three new lines of business. Now, we have 4 business that are part of our strategy:

- Asset management: we have strived to find more environmentally-friendly business alternatives adapted to our clients' needs. The development of new technologies and appearance of increasingly more active clients interested in finding out the origin of their product and even controlling their consumption or managing their demand compels us to dare to be different and to innovate in providing products and services that make our clients' lives even easier. See: <http://www.celsia.com/en/Home-en> (products section)
- Cities: we play an active role in modern and friendly urban development, taking advantage of the trend of building cities within cities, where we will provide services that go beyond supplying energy, which include cooling districts, co-generation, water, lighting, and electric transportation. See: <http://www.celsia.com/en/clients/cities>
- Businesses: we want to comprehensively solve the energy needs of businesses, industries and real estate developers. Our objective is to venture far beyond the meter and make investments in electricity assets, combining these with operation, maintenance and energy-supply services. See: <http://www.celsia.com/en/Clients/Bussines>
- Homes: the portfolio consists of photovoltaic solar energy, batteries that store energy services automation or automated energy management in the home, and funding options for these platforms. See: <http://www.celsia.com/en/clients/homes>

---

## CC0.2

### Reporting Year

Please state the start and end date of the year for which you are reporting data.

The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.

We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.

Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

**Enter Periods that will be disclosed**

**Enter Periods that will be disclosed**

Fri 01 Jan 2016 - Sat 31 Dec 2016

---

**CC0.3**

**Country list configuration**

Please select the countries for which you will be supplying data. If you are responding to the Electric Utilities module, this selection will be carried forward to assist you in completing your response.

**Select country**

Colombia

Panama

Costa Rica

---

**CC0.4**

**Currency selection**

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

COP

---

**CC0.6**

**Modules**

As part of the request for information on behalf of investors, companies in the electric utility sector, companies in the automobile and auto component manufacturing sector, companies in the oil and gas sector, companies in the information and communications technology sector (ICT) and companies in the food, beverage and tobacco sector (FBT) should complete supplementary questions in addition to the core questionnaire.

If you are in these sector groupings, the corresponding sector modules will not appear among the options of question CC0.6 but will automatically appear in the ORS navigation bar when you save this page. If you want to query your classification, please email [respond@cdp.net](mailto:respond@cdp.net).

If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below in CC0.6.

---

## Further Information

**Module: Management**

**Page: 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

---

#### CC1.1a

**Please identify the position of the individual or name of the committee with this responsibility**

The highest level with direct responsibility for climate change in Celsia is the CEO and the Board of Directors. Celsia has a Sustainability and Corporate Governance Committee in charge of formulating proposals and actions that take into account Sustainability best practices, and for monitoring and following up plans and management regarding this matter.

All of them are supported by the Steering Committee and Generation VP to drive the implementation of the climate change policy processes, managing initiatives to mitigate GHGs, supporting processes dissemination, incentives and awareness among employees, and presenting to the community and other stakeholders how the company manages this material issue (Socio-environmental management). The Generation duties includes: build and periodically updating the sustainability policy including the material issues related with climate change, water related issues, biodiversity and environmental impacts among others, Celsia have a Corporate staff Socioenvironmental. They lead the various initiatives that are developed for the different equipment such as Finance team: carbon taxes and financial aspects related with climate change management; Planning team that are responsible for the growth of the company and should take into account issues of specific to climate change and also other commitments as iNDC of COP 21 undertaken by Colombia, Regulatory affairs needs to do continuous overseeing of new regulations or regulatory changes related to climate change and how they can impact businesses of the company, and the Operation teams focus on operative standards on in such a way that emissions are minimizing when this is technically and economically possible, all these efforts are reflected in an optimization of the operation that is reported annually in the Integrated Report - IR, the DJSI and in the measurement of water and carbon footprints of the company.

---

**CC1.2**

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

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
All employees	Monetary reward	Other: DJSI results	The Company has implemented a Variable Compensation System, which aims to improve the Organization's results through good performance of employees in carrying out the corporate and competitive strategy. This system rewards employees for good performance achievements by paying an annual bonus which is not part of their salary. The 11% of such compensation corresponds to the performance of sustainability material issues. The metric is established based on the DJSI score. By 2016 the goal set was achieved, and in 2017 employees received 110% of the compensation for this concept. In order to improve the company's DJSI performance, all relevant areas have action plans to improve the material issues with some gaps related with DJSI, thus helping to achieve the goals established by Celsia (including those associated to climate change).

---

**Further Information**

**Page: 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

**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	Colombia, Panamá and Costa Rica	1 to 3 years	In the company, risk governance is understood to be a differentiating and essential factor for achieving business sustainability. Our risks analysis is based on an exercise that has multiple variables, in accordance to the risks manual of the Company. The manual offers a detailed explanation of the methodology adopted for risk management and the determination of the frame of action. Regarding climate risk management, it is integrated into the risk management process of the company, which consists of a homologous and systematic implementation of joint actions in the optimal management of risks that may affect the strategy and sustainability model, so that it may reasonably ensure compliance with its objectives. The integral management of cycle risk involves identification, communication, assessment and monitoring. All these stages include control actions to minimize them. The risk management policy of the company defines that each area or process

**CC2.1b**

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

Climate change is identified as 1 of the aspects with the greatest relevance in the decision-making process & evaluations of stakeholders. Risk management is understood as a differentiating factor & as fundamental to achieving the business sustainability. That's why Celsia has expressed its commitment with the mitigation & adaptation strategies to manage emissions, & the incorporation of ecoefficient actions in its processes.

Climate risk management has been integrated into the risk management system. It is a measure & systemic application of coordinated actions regarding the ideal management of the risks that can affect the company's strategy model & sustainability, as well as the capability to achieve the goals. The integral management involves identification, communication, assessment & monitoring. Celsia's risk management policy indicates that all divisions and processes must be included in the risk management system & the risk manual provides a detailed explanation of the risk-management methodology & action framework in place.

This process is methodically executed with the support of the risks division. The risks related to climate change are identified by the organization in line with the risks policy. Risks originating from weather phenomena are also monitored through the sales management process, assessing their impact on operational margins. This

offers the possibility to detect opportunities for the commercialization of energy, either the purchase or sale of, or the need to contract additional fuel for greater thermoelectric generation. In this way, the exposure of the portfolio caused by unfavorable water levels is reduced. In order to manage the identified risk in relation to weather phenomena, Celsia carries out generation planning in deposits, through which it ensures the energy for the system & reduces the impact of said phenomena on the communities to a minimum because the deposit hydroelectric power plants facilitate the regulation of the water.

---

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

Celsia identified the risks based on a qualitative & quantitative analysis, according to the guidelines established in the definition of risk tolerance and appetite, & based on an assessment of the controls established so as to prioritize the principle residual risks that could affect the Company. Each risk is analyzed according to different dimensions, seeking to cover all strategic variables & stakeholders. These dimensions are: economic, reputational, environment, social, regulatory, occupational health and safety, and operating continuity. See risk management at <https://goo.gl/cajBUK> Report 2016, p 53-60 & see climate change p 168-173 & <https://goo.gl/0UXn4X>

Attached are the dimensions and definitions of risk appetite and tolerance. Once the risks are analyzed, the failures that could give rise to the materialization of the risk are identified; plans or projects to be developed so as to reduce the level of risk are then proposed. The risk area monitors advances in the plans for the control of risks, and the Audit Department validates compliance of said plans and projects.

The Company conducted a correlation analysis of the strategic business risks - known as TREND AND RISK MANAGEMENT - as part of its decision-making & management process, based on the methodology of the insurance company SURA. Also, Celsia conducts a water-stress analysis for all areas where its generation assets are located; last year's report shows that none of the assets are located in water stress areas. In addition, Celsia is strengthening this area as part of the analysis of generation opportunities by analyzing generation dispersions in critical scenarios. Moreover, the company analyzes the risk correlation for activities that cut across the Company, such as the commercial strategy; this study sets out an analysis of the Company's commercial exposure and the effects on revenues, taking into account energy procurement levels, water levels, and fuel availability, which are correlated.

---

**CC2.1d**

Please explain why you do not have a process in place for assessing and managing risks and opportunities from climate change, and whether you plan to introduce such a process in future

Main reason for not having a process	Do you plan to introduce a process?	Comment
--------------------------------------	-------------------------------------	---------

---

**CC2.2**

## Is climate change integrated into your business strategy?

Yes

---

### CC2.2a

#### Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process

The year 2016 was marked by the start of the projects and actions that allow us to progress in the consolidation of the corporate strategy established for the 2015-2025 period. Said strategy prioritizes the diversification of products and services with technology and processes that have low carbon emissions; an increase in the number of clients; and the segmentation of clients in the City, Business and Home segments to offer differentiated bespoke products and services. Our Company firmly believes in our responsibility of caring for the planet, people and the resources that we use. We believe that it is possible to have a profitable company and, at the same time, contribute to the social development of the regions where we operate, with deep respect for the environment. See our BHAG - Big, Hairy & Audacious Goal at: <https://goo.gl/Y3mYrw>

We understand sustainability to be the ethical and transparent generation of value over time for all of our stakeholders, achieving a balance between profitability, development and social inclusion, and respect for the environment. Through its strategy, the Company works for sustainable growth by committing to:

- The comprehensive development of employees in order to have an outstanding team committed to the organizational culture.
- Providing a business portfolio with emphasis on client management, availability of resources and innovation.
- Management of social, economic and environmental risks resulting from the business model and operations.
- Strengthening stakeholder relations and engagement channels based on respect and building mutual trust.
- Continuous improvement of processes, considering the contribution to the main Sustainable Development Goals (SDGs) that the Organization works on.

Celsia recognizes the importance of environmental conservation and the rational use of natural resources, by promoting the use of low-carbon energy and diversifying its offering of products and services to improve people's quality of life, that's why the Company has an Environmental Policy that includes different subpolicies, one of them related with Climate change and management of emissions. See: <https://goo.gl/8Gvi0x>. With these policies, the Company establishes the guidelines of action for employees and the framework of references for all other stakeholders in relation to the environment. Climate change is identified as a material issue within the socio-environmental management and is incorporated into our business model, similarly, risk and opportunities are analyzed to identify new business opportunities by diversifying the portfolio of products aligned with our strategy.

In this sense, in Celsia we are convinced that the time for non-conventional renewable energy has come and solar and wind generation are the main sources for us: their costs currently are competitive and there are many possibilities that complement our portfolio very well. We therefore leverage the knowledge that our research and development teams have acquired in the understanding and use of solar energy and the wind operation in Costa Rica, as part of our aspiration to become leaders in the use of these technologies.

At Celsia, we see great opportunities in solar power generation. Therefore, we have decided to develop organizational capacity for the construction and operation of this technology. Additionally, we have focused on an ambitious expansion plan of this kind of project and we hope to build a capacity of 250 MW in the medium term in Colombia and Panama. Also, we are convinced of the competitiveness of wind power generation, we have been working on the different studies and processes of permits and licenses to make the expansion of our new wind power plant by 60 to 70 MW feasible. In 2017, we will keep making progress in the development of this project with the aim to have the wind farm in the conditions to participate in a future energy auction in the country. Currently, Celsia has an installed capacity of

2,387 MW with a generation mix of 51% hydroelectric, 48% thermal and 2% wind. In the long term (2025) we are going to have an installed capacity of 3,374 MW: 46% hydroelectric, 34% thermal & 20% of wind and other renewables.

Celsia is on the cutting edge of this technology in Colombia after more than four years of hard work, during which task groups that involved all the areas of the Company managed to overcome paradigms and rethink processes, as well as negotiation and operating systems. This technology allows us to grow and complement our generation matrix, have different relations with clients who seek clean energy consumption, achieve our profitability targets and project ourselves as a modern and innovative Celsia.

At Celsia, we have closely followed these developments, and have prepared ourselves to take advantage of the opportunities that arise out of them. We have therefore decided to include, as a fundamental part of our strategy, the development of new businesses geared toward meeting the needs of evermore active and well-informed clients. This last point is what has allowed us to change how we see the business, and we are concentrating on building a customer-facing company, managed not on the basis of assets like a traditional public utilities company, but as a modern company where plants, lines and substations are just one means of improving people's quality of life. We plan to implement this through 4 business units:

- Asset management: we have strived to find more environmentally-friendly business alternatives adapted to our clients' needs. The development of new technologies and appearance of increasingly more active clients interested in finding out the origin of their product and even controlling their consumption or managing their demand compels us to dare to be different and to innovate in providing products and services that make our clients' lives even easier. See: <http://www.celsia.com/en/Home-en> (products section)
- Cities: we play an active role in modern and friendly urban development, taking advantage of the trend of building cities within cities, where we will provide services that go beyond supplying energy, which include cooling districts, co-generation, water, lighting, and electric transportation. See: <http://www.celsia.com/en/clients/cities>
- Businesses: we want to comprehensively solve the energy needs of businesses, industries and real estate developers. Our objective is to venture far beyond the meter and make investments in electricity assets, combining these with operation, maintenance and energy-supply services. See: <http://www.celsia.com/en/Clients/Bussines>
- Homes: the portfolio consists of photovoltaic solar energy, batteries that store energy services automation or automated energy management in the home, and funding options for these platforms. See: <http://www.celsia.com/en/clients/homes>

---

## CC2.2b

Please explain why climate change is not integrated into your business strategy

---

## CC2.2c

Does your company use an internal price on carbon?

No, but we anticipate doing so in the next 2 years

---

CC2.2d

Please provide details and examples of how your company uses an internal price on carbon

---

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

---

CC2.3a

On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
Carbon tax	Support with major exceptions	The possibility of including a carbon tax in the tax reforms was discussed in Colombia during 2016. Celsia presented the analyses to the relevant authorities, which show that said measure would increase the variable costs of generation, affecting the principle of free enterprise and free competition, and result in higher rates for end clients.	The Carbon Tax was included in the 2016 Tax Reform. Seeking to de-incentivize the use of fossil fuels, and as part of the country's efforts to meet the COP21 agreements made in Paris, the new tax regime included the so called "green tax" which taxes carbon emissions from the use of said fuels. In the tax reform, natural gas and coal was exempt from the CO2 tax because it was understood that said tax would involve a greater cost for users as well as the government due to the increase in energy subsidies, and this cost would exceed the amount that would be collected by the tax. In the Tax Reform, only the sale of natural gas to the refinement of hydrocarbons and petrochemical industries is taxed. Coal

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
			is exempt from the CO2 tax because it's understood that said tax would imply a higher cost for both users and for the government, due to the increase in energy subsidies.
Carbon tax	Support with major exceptions	In Panama, the regulatory body submitted a proposal for the amendment of Law 6/1997, which established the regulatory and institutional framework for the provision of electricity. The proposal includes a series of important amendments to the system of the current market. The most important one of these amendments for the Company was the application of a penalty for bids in the invitations to tender by power plants that use fossil fuels. Said penalty would be proportional to the CO2 emissions for each kWh generated. Regarding this aspect, Celsia shared an analysis with the National Public Utilities Authority (ASEP, for the Spanish original) of Panama, as we did in Colombia.	Currently, the topic is under revision by Panamanian authorities. Celsia will continue working with the ASEP to prevent a counter-incentive, which involves the proposal to penalize thermal power generation bids in the invitations to tender, and would affect not only our Bahía Las Minas and Cativá thermal power plants, but also our clients.
Clean energy generation	Support	Celsia has participated through the guilds in the advocacy of law 1715 renewable energy. Currently involved in discussion to promote the regulation of this law, it is expected the government implement environmental schemes, social, legal and taxation to facilitate the modernization of the energy mix for this year because of COP21 commitments	At the moment, it has made the national tax authority (DIAN) apply the tax regime of incentives for renewable energy and UPME (Mining and Energy Planning Unit) establish the conditions for registration of these projects.
Energy efficiency	Support	The Colombian Association of Electric Power Generators has the fundamental objective of supporting and promoting programs, policies and/or actions aimed at ensuring the sustainable development of Colombian power generation industry. The following measures were taken by the association to contribute to these processes: <ul style="list-style-type: none"> <li>• Active participation to design Policies and environmental regulations.</li> <li>• Proposals to ensure environment protection and sustainability of electricity's provision.</li> <li>• Support of activities and actions aimed at ensuring availability and protection of water resources.</li> </ul> The association encourages companies in the sector to become a great protector of biodiversity and other resources, including species threatened with extinction, and in actors that do not generate environmental liabilities to the planet. Likewise, the sustainable use of	Celsia participated in the study of the energy and regulation policy for the development of smart networks, and in the roadmap to 2030. This project was led by the Mining and Energy Planning Unit (UPME), the organization Colombia Inteligente, and the InterAmerican Development Bank (IADB).

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
		<p>natural resources of the country for electricity generation is driven, while for coping with climate variability and vulnerability of water sources, the potential of other renewable and alternative energies such as wind, solar and geothermal sources are studied in order to ensure future supply and to maintain a lowcarbon economy.</p>	
<p>Other: National Policies for Mitigation and Adaptation to Climate Change National Policies for Mitigation and Adaptation to Climate Change</p>	<p>Support</p>	<p>The “Intended Nationally Determined Contribution” (iNDC). presented by Colombia at COP 21 established a 20% reduction of GHG emissions compared to projected emissions by 2030. Currently is deciding how will perform the distribution of sectoral goals. In the case of Panama, its national contribution INDC establishes a commitment to reduce emissions to 2050, where 30% of the Mix will be based on renewable energy, currently Celsia is studying the effect of this on our operations and how Celsia can contribute to this national goal. The commitment of Costa Rica INDC 2030 states maintain their net emissions in tons of CO2 eq 9'374.000, which equals a reduction of 44% compared to BAU scenario, because our operations are in wind energy and the perspective of growth is based on increasing renewable energy generation, Celsia expects that its operation will help to accomplish the country iNDC.</p>	<p>Celsia jointly with other companies is involved in the Climate Change Committee with the Energy and Mines Ministry, this committee is currently building the sectoral action plan for mitigation and adaptation to climate change in the electricity sector in Colombia. In the case of Panama, Celsia is analyzing the impact of INDC presented by this country as committed to reducing emissions by 2050, which states that in that year would be 30% of the mix based on renewable energy.</p>

**CC2.3b**

**Are you on the Board of any trade associations or provide funding beyond membership?**

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?
ACOLGEN (Asociación Colombiana de Generadores de Energía)	Consistent	The Colombian Association of Electric Power Generators has the fundamental objective of supporting and promoting programs, policies and/or actions aimed at ensuring the sustainable development of Colombian power generation industry. The following measures were taken by the association to contribute to these processes: • Active participation to design Policies and environmental regulations. • Proposals to ensure environment protection and sustainability of electricity's provision. • Support of activities and actions aimed at ensuring availability and protection of water resources. The association encourages companies in the sector to become a great protector of biodiversity and other resources, including species threatened with extinction, and in actors that do not generate environmental liabilities to the planet. Likewise, the sustainable use of natural resources of the country for electricity generation is driven, while for coping with climate variability and vulnerability of water sources, the potential of other renewable and alternative energies such as wind, solar and geothermal sources are studied in order to ensure future supply and to maintain a lowcarbon economy. ( <a href="https://www.acolgen.org.co/">https://www.acolgen.org.co/</a> )	As members we provide information, expertise in best practices and comments about the position of the company regarding the regulation and public policies in order to support the position and the advocacy work of the association.
ANDEG (Asociación Nacional de Empresas Generadoras)	Consistent	ANDEG aims to propose and promote measures that contribute to National Government, Regulatory Committee, and Control and Supervisory authorities, to deepen the energy market. It also promotes the participation of associate companies in sectoral studies related to Climate Change and Sustainability as "energy policy objectives for a sustainable electricity market: Recovering efficient thermal generation for energy market" ( <a href="http://www.andeg.org/node/25">http://www.andeg.org/node/25</a> ).	As members we provide information, expertise in best practices and comments about the position of the company regarding the regulation and public policies in order to support the position and the advocacy work of the association.
ANDI	Consistent	Is a non-profit organization whose main purpose is to expand and promote economic, social and political principles within a free enterprise system, based upon beliefs that include human dignity, political democracy, social justice, private property and liberty. ANDI was created in in September 11, 1944, and since then it has always been the most important private sector association. It groups more than 1100 companies that belong to different sectors of the economy: manufacturing, financial, food, mining, health, agriculture, services, among others and therefore represents a high percentage of Colombia's GDP and total employment. As representative of the private sector's interests, the National Business Association of Colombia assumes the representation of its members before national and international institutions, dealing with economic,	As members we provide information, expertise in best practices and comments about the position of the company regarding the regulation and public policies in order to support the position and the advocacy work of the association.

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?
		legal, social, environmental, and business issues. See: ( <a href="http://www.andi.com.co">http://www.andi.com.co</a> )	
ANDESCO (Asociación Nacional de Empresas de Servicios Públicos Domiciliarios)	Consistent	The objectives of ANDESCO are: To promote corporate and community environmental management under the principles of sustainability, understood as the right balance between environmental, social and economic aspects, in order to achieve Sustainable Development. ( <a href="http://www.andesco.org.co/">http://www.andesco.org.co/</a> )	As members we provide information, expertise in best practices and comments about the position of the company regarding the regulation and public policies in order to support the position and the advocacy work of the association.

**CC2.3d**

**Do you publicly disclose a list of all the research organizations that you fund?**

Yes

**CC2.3e**

Please provide details of the other engagement activities that you undertake

**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?**

We are convinced that we need to establish ethical & transparent relationships with all our stakeholders that facilitate two-way communication, maintain ongoing dialog & generate shared value over time. Therefore, we have established stakeholder relations as an essential pillar for the Organization in our Sustainability

Policy. In accordance with the above & to ensure adequate management of each stakeholder, different teams in the Company are responsible for stakeholder relations. Therefore, the Chief Legal Counselor & Chief Regulatory Officer lead relations with trade groups & associations, regulatory bodies & government entities. Additionally, the Chief Legal Counselor leads media relations. In the Finance Department, we have an exclusive team for shareholder & investor services. Through this department, we have the leadership of suppliers with an Strategic Supply Team. The HR & Administration Department coordinates & implements strategies with our employees and coordinates relations with R+D and academic centers together with the Innovation Department. Customer relations and communication strategies are established and managed through the Sales Department. The Socio-environmental Team, leads all issues related to communities in our areas of influence. To strategically manage stakeholder relations, we have different mechanisms to keep ourselves informed, consult stakeholders and talk to them about issues related to sustainability.

New developments, including those in intelligent networks, power system control equipment, information technology & communications, are driving changes in the electricity markets & creating a new horizon for the market agents, mainly the distribution companies, which will be responsible for the transition from the conventional system to the new transaction platforms that the market will require as distributed generation increases, especially in the form of self-generation. In the Colombian context, the electricity sector is in a process of considering the changes that need to be made to the energy market to make it more competitive, dynamic and essentially more efficient. To consolidate a competitive energy market in which efficiency and innovation are rewarded, the companies' proactive participation in the work the sector's authorities need to carry out is an important factor in building a consistent regulatory framework that allows companies and clients to use new business models. Therefore, we aim to keep submitting proposals that promote the right conditions for the development of the electricity sector, which is a great challenge for the Company in terms of management of the traditional business and the new growth targets that we have set for ourselves.

For example, we participated in important discussions on the regulatory proposals that propose a change to the system of remuneration of the services. Although these talks have run into 2017, they allowed the communication of the transmission and distribution companies' expectations to the government in terms of the future sustainability of this business. Therefore, we progressed in the submission of proposals to the regulatory body that facilitate migration from traditional systems to intelligent ones that support the provision of new services and activities, especially, self-generation, response to demand and sustainable solutions for urban centers. Additionally, in the Sales business, we analyzed the reliability and longterm energy contract markets with the aim to participate in the discussions with proposals, which we hope will lead to a series of adjustments in the wholesale energy market in 2017. Furthermore, the possibility of including a carbon tax in the tax reforms was discussed in Colombia. In this respect, we presented our analyses to the relevant authorities, which show that said measure would increase the variable costs of generation, affecting the principle of free enterprise and free competition, and result in higher rates for end clients. Finally, in the tax reform, natural gas and coal was exempt from the CO2 tax because it was understood that said tax would involve a greater cost for users as well as the government due to the increase in energy subsidies, and this cost would exceed the amount that would be collected by the tax. In Panama, the regulatory body submitted a proposal for the amendment of Law 6/1997, which established the regulatory and institutional framework for the provision of electricity. The proposal includes a series of important amendments to the system of the current market. The most important one of these amendments for the Company was the application of a penalty for bids in the invitations to tender by power plants that use fossil fuels. Said penalty would be proportional to the CO2 emissions for each kWh generated. Regarding this aspect, we shared our analyses with the National Public Utilities Authority (ASEP, for the Spanish original) of Panama, as we did in Colombia.

---

CC2.3g

Please explain why you do not engage with policy makers

---

**Further Information**

The files attached correspond to the question CC2.1c How do you prioritize the risks and opportunities identified? For the question 2.2 c: The Company continues working towards implementing a methodology to set an internal carbon price for projects. Meanwhile, investment opportunities are evaluated as standalone projects and then analyzed within the company's portfolio through a project prioritization matrix which includes avoided CO2 emissions as an indicator. The system ranks competing projects, taking into account their main capital budgeting indicators that maximize company's value and minimize risks. Considering none of them are thermal, some projects would rank higher in this indicator depending on avoided emissions. For example, Small Hydro generation projects are capable of avoiding more emissions than non-conventional renewable technologies, considering its load factor is normally higher. The Company has already developed renewable energy projects (small hydropower facilities) that avoid annually an average of 154,000 Tons of CO2. Additionally, the company continues to develop non-conventional renewable energy projects that could avoid annually an average of 260,000 Tons of CO2

---

#### Attachments

[https://www.cdp.net/sites/2017/29/45029/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC2.Strategy/Risk Manual.pdf](https://www.cdp.net/sites/2017/29/45029/Climate%20Change%202017/Shared%20Documents/Attachments/ClimateChange2017/CC2.Strategy/Risk%20Manual.pdf)  
[https://www.cdp.net/sites/2017/29/45029/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC2.Strategy/Climate change analysis.pptx](https://www.cdp.net/sites/2017/29/45029/Climate%20Change%202017/Shared%20Documents/Attachments/ClimateChange2017/CC2.Strategy/Climate%20change%20analysis.pptx)  
[https://www.cdp.net/sites/2017/29/45029/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC2.Strategy/Risk Management Policy 2017.docx](https://www.cdp.net/sites/2017/29/45029/Climate%20Change%202017/Shared%20Documents/Attachments/ClimateChange2017/CC2.Strategy/Risk%20Management%20Policy%202017.docx)  
[https://www.cdp.net/sites/2017/29/45029/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC2.Strategy/Dimensions and definition of appetite and risk tolerance.xlsx](https://www.cdp.net/sites/2017/29/45029/Climate%20Change%202017/Shared%20Documents/Attachments/ClimateChange2017/CC2.Strategy/Dimensions%20and%20definition%20of%20appetite%20and%20risk%20tolerance.xlsx)

#### Page: 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?**

Intensity target  
Renewable energy consumption and/or production target

---

##### CC3.1a

Please provide details of your absolute target

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions covered by target (metric tonnes CO2e)	Target year	Is this a science-based target?	Comment
----	-------	-------------------------	----------------------------	-----------	--	-------------	---------------------------------	---------

**CC3.1b**

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions covered by target	Target year	Is this a science-based target?	Comment
Int1	Scope 1+2 (location-based)	100%	25%	Other: Metric tonnes CO2e per GWh	2015	0.38	2025	No, but we anticipate setting one in the next 2 years	Climate change poses a challenge for Celsia, because it can cause changes in weather conditions, and said alterations could have a potential impact on the rivers' water levels, on the soil, on the basins and on the behavior of the seasons in the year, which would affect the Company's operations. Therefore, we are committed to the management of greenhouse gas (GHG) emissions and in 2016, we made commitments regarding climate change in our Environmental Policy, which include diversification of the generation matrix, promotion of alternative non-conventional energy with low carbon emissions, improvement of operating efficiency and adequate emissions management. We have proposed a 25% reduction in the intensity of GHG emissions related to electric power generation by 2025 (2015 as the base year), which involves limiting growth of thermal power plants using coal and reinforcing the commitment to increase wind, solar and hydroelectric power generation in the Company.

CC3.1c

Please also indicate what change in absolute emissions this intensity target reflects

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comment
Int1	Decrease	6.08			<p>We are committed to the management of greenhouse gas (GHG) emissions and in 2016, we made commitments regarding climate change in our Environmental Policy, which include diversification of the generation matrix, promotion of alternative non-conventional energy with low carbon emissions, improvement of operating efficiency and adequate emissions management. We have proposed a 25% reduction in the intensity of GHG emissions related to electric power generation by 2025 (2015 as the base year), which involves limiting growth of thermal power plants using coal and reinforcing the commitment to increase wind, solar and hydroelectric power generation in the Company. In 2016, the total generation was 7.125 GWh, 627 GWh less than the generation obtained in 2015. Despite El Niño phenomena, hydraulic generation had an increment of 10% respect to 2015. The difference was related to Thermal and Eolic sources due to change in climate during the last stage of the Niño where the dam-water release of the hydraulic sources affected the dispatch of Zona Franca and Merilectrica Thermal Power Stations, and the drop of wind velocities at the Guanacaste Eolic Park.</p>

CC3.1d

Please provide details of your renewable energy consumption and/or production target

ID	Energy types covered by target	Base year	Base year energy for energy type covered (MWh)	% renewable energy in base year	Target year	% renewable energy in target year	Comment
RE1	Electricity production	2015	3420000	44%	2025	59%	Celsia is developing non-conventional renewable energy projects, which include: more than 200 MWp of solar projects in Colombia & 230 MWp of distributed energy to take advantage of fiscal benefits that the government is promoting for these technologies. As a part of the 200 MWp pipeline solar project, Celsia is developing its first solar project of 11.2 MWp, as well as the technical feasibility for a wind project of 330 MW. The Company has also identified non-conventional renewable opportunities in Central America which include: 70 MW of wind projects in Costa Rica and 34 MWp of solar projects in Panama.

**CC3.1e**

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

ID	% complete (time)	% complete (emissions or renewable energy)	Comment
Int1	10%	24.32%	

**CC3.1f**

Please explain (i) why you do not have a target; and (ii) forecast how your emissions will change over the next five years

**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

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	We established a new business model founded on the photovoltaic energy supply. In this regard, we have installed projects in different regions of the country: in Valle del Cauca, with projects installed in the Universidad Autónoma de Occidente in Cali; Ciudad Santa Bárbara in Palmira; Ciudadela el Castillo and Urbanización Océano Verde in Jamundí; and in Antioquia we installed in the Compañía Nacional de Chocolates in Rionegro, Fundación Socya and Reserva mall in Medellín.	Avoided emissions	Other: Estimate based on the emission factor UPME Colombia	0.06%	Less than or equal to 10%	In 2016, the company launched its new portfolio of products and services, including the following: 1. Solar energy. 2. Cogeneration 3. Efficient lighting 4. Energy Efficiency With this new portfolio is expected to start earning revenue from 2017.
Group of products	Power generation from renewable sources	Low carbon product	Other: Power generation from renewable sources: water and wind, seven (7) plants have	37%	Less than or equal to 10%	Power generation from renewable sources: one Wind Power Plant in Costa Rica and 21 power plants hydraulic in Panamá and Colombia. In 2016 power generation from

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
			CDM and one plant have VCS verification methodology.			renewable sources was 3486 GWh. It is accounting for 49% of power generation company. The company participate in carbon markets with projects registered under the United Nations Clean Development Mechanism (CDM). An example of this is the Guanacaste Wind Farm, Costa Rica, through which 97,500 CERs were issued for USD 950,625

### 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

### 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	4	
To be implemented*	7	244490
Implementation commenced*	25	3142
Implemented*	1	16
Not to be implemented		

### CC3.3b

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Low carbon energy installation	Installation of 96 solar panels with a capacity of 30.73 kWp in the mall La Reserva in Medellin.	16	Scope 1	Voluntary	0	111940080	1-3 years	16-20 years	

### CC3.3c

What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Other	Celsia has identified opportunities from the hydrological risk associated with climate change & the governmental awareness to control carbon emissions, with specific incentives as those included in Law 1715/14) in Colombia. As a result, Celsia is developing non-conventional renewable energy projects, which include: more than 200 MWp of solar projects in Colombia & 230 MWp of distributed energy to take advantage of fiscal benefits that the government is promoting for these technologies. As a part of the 200 MWp pipeline solar project, Celsia is developing its first solar project of 11.2 MWp, as well as the technical feasibility for a wind project of 330 MW. The Company has also identified non-conventional renewable opportunities in Central America which include: 63 MW of wind projects in Costa Rica and 50 MWp of solar projects in Panama. However, the Company is still conducting technical studies & financial analysis before the projects achieve the financial closing.
Dedicated budget for low carbon product R&D	Through the innovation model of the company, investment in research and implementation of renewable energy projects. innovation investment in 2016 was 5,815,000,000 COP. The lines of research into innovation are: 1. Electric Storage 2. Electric Transportation 3. Energy Efficiency 4. building automation
Partnering with governments on technology development	We assessed the possibility of generating energy from wind in small-scale applications. To do this, we installed a micro-wind turbine with a capacity of 1 kW that will provide energy to the internal circuit of the Cementos Argos Plant in Cartagena, Colombia. The exercise gave us valuable information on the feasibility of this kind of technology in the regional context and embedded in a hydroelectricity dominated market. Conceptual and basic engineering studies were conducted for electric and thermal power co-generation projects using the waste of sugarcane bagasse from cane crushing mills as the raw material. The related business model is under study.

**CC3.3d**

If you do not have any emissions reduction initiatives, please explain why not

**Further Information**

**Page: CC4. Communication**

**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) in accordance with the CDSB Framework	Complete	<a href="http://www.celsia.com/Portals/0/contenidos-celsia/accionistas-e-inversionistas/pdf/celsia/ENG/Integrated-Report-Celsia-2016.pdf">http://www.celsia.com/Portals/0/contenidos-celsia/accionistas-e-inversionistas/pdf/celsia/ENG/Integrated-Report-Celsia-2016.pdf</a>	<a href="https://www.cdp.net/sites/2017/29/45029/Climate Change 2017/Shared Documents/Attachments/CC4.1/Integrated-Report-Celsia-2016.pdf">https://www.cdp.net/sites/2017/29/45029/Climate Change 2017/Shared Documents/Attachments/CC4.1/Integrated-Report-Celsia-2016.pdf</a>	
In voluntary communications	Complete	DJSI Questionnaire_Chapter 2: Environmental		
In voluntary communications	Complete	<a href="http://www.celsia.com/sustainability/">http://www.celsia.com/sustainability/</a>		

#### Further Information

### Module: Risks and Opportunities

#### Page: 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**

- Risks driven by changes in regulation
- Risks driven by changes in physical climate parameters
- 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	Possible changes in the regulation converting existing reservoirs to multipurpose use and decrease in flows that are granted or renewed by environmental restrictions. Colombian authorities are currently evaluating the imposition of new environmental regulations to modify the environmental flow requirements, lowest level of reservoir operation, reservoir management plans, sediment	Reduction/disruption in production capacity	1 to 3 years	Direct	Very likely	Medium-high	Celsia is considering making the analysis of financial implications in the medium term	The organization consistently monitors initiatives that can generate adverse regulatory changes to the company, for the purpose prevent and mitigate its effects. Celsia forward proactive work with the guilds, participating in panel discussions for the regulation of standards.	The costs associated with managing this risk are related to travel and transportation for participation and attendance at events in all these initiatives, as well as the payment of complementary and explanatory studies, the cost is estimated at \$ 300 million of COP.

Risk driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	management among others.								
Carbon taxes	In the Colombian Tax Reform of 2016, natural gas and coal were exempt of CO2 tax, as a result Celsia natural gas fired facilities were not affected by the mentioned reform. However, according to analysis presented by the Colombian Environment Ministry, in the coming years the CO2 tax-exempt companies could be charged, and the cost would be approximately US\$ 10 to US\$ 15 per Tons of	Reduction in capital availability	1 to 3 years	Direct	Virtually certain	High	The Celsia financial annual cost would be: $TR = \text{Cost Tons of CO}_2 \times \text{Tons of CO}_2$ $TR = (\text{USD } 15/\text{Tons of CO}_2 \times 2.731.872,55 \text{ Tons of CO}_2 (\text{Average } 2015-2016)) = \text{USD } 40.978.088 (\text{COP } \$122.934.264.741)$ ; [See p.170 RI 2016, ( <a href="https://goo.gl/cajBUK">https://goo.gl/cajBUK</a> )	Setting the strategy, which includes business diversification and increasing participation of renewable energies	For the next ten years Celsia expects to invest more than one billion dollars in new business and mix diversification. The annual costs associated with developing these opportunities correspond to the average annual estimated combined CapEx in Colombia, Panama and Costa Rica in four years (2017 – 2020). In this period of time, the total CapEx in Colombia for this projects

Risk driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	CO2.								will be US\$ 244 million corresponding to US\$ 173 million (COP 544,003 MM) for photovoltaic solar projects and US\$ 75 million (COP 232,873 MM) for distributed energy. For Central America projects the estimated CapEx is US\$ 41 million (COP 127,551 MM) for photovoltaic solar projects and US\$ 120 million (COP 376,220 MM) for wind projects.
Product efficiency regulations and standards	Changes in energy regulation in Colombia adversely	Reduced demand for goods/services	>6 years	Indirect (Client)	Likely	Medium-high	Analysis of financial implications has not been carried out.	Development of activities for improving processes, products and	For 2016, the company's investment in innovation projects

Risk driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>affecting the operation of assets, their profitability or business continuity:  The Colombian government, through the Ministry of Mines and Energy through Law 697 of 2011 commits the Rational and Efficient Use of Energy (URE) as a matter of social, public and national interest, essential to ensure the full and timely energy supply, competitiveness of the Colombian economy, consumer protection and promotion of the use of non-conventional</p>							<p>services to promote overall growth, achieve efficiency and ensure better market position.</p>	<p>amounted to COP 5800 million.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	energy in a sustainable way with the environment and natural resources. In addition, under Resolution 180919 of 2010, it adopted the Action Plan to develop the Program of Rational and Efficient Use of Energy and other forms of non-conventional energy. These government measures aimed at reducing electricity demand and further development of competitors who offer renewable energy.								
General	Colombia is	Increased	1 to 3	Direct	Very likely	Medium-	Analysis of financial	Through our	The costs

Risk driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
environmental regulations, including planning	currently defining its Climate Change Law through which all instruments designed to meet the COP21 commitments will be determined. It has been identified that through this mechanisms specific reduction goals will be imposed to the mining and energetic sectors.	operational cost	years			high	implications has not been carried out.	participation in guilds and discussion boards of the national policy scenarios, we bring technical arguments to the discussion and capture relevant information for the guild	associated with managing this risk are related to travel and transportation for participation and attendance at events in all these initiatives, as well as the payment of complementary and explanatory studies, the cost is estimated at \$ 300 million of COP

**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 extremes and droughts	Shorter and intense droughts or floods: Within the risks matrix of the Company, it has been identified that the current natural phenomena associated with climate change affects river levels (flows), which are used during operations. In 2017 an IDEAM study based in a standard 30-year series of rainfall records from several rivers in our country, suggests that climate change could limit the effective capacity of generation in all reservoirs. Reservoirs were classified according to the level of vulnerability to	Reduction/disruption in production capacity	1 to 3 years	Direct	Likely	Medium-high	Analysis of financial implications has not been carried out.	The company has been linked to conservation and reforestation initiatives strategic to its operations in the basins. In Colombia, we started the ReverdeC project, a voluntary initiative of the Organization, through which we planted 562,775 new trees in Valle del Cauca (Colombia), contributing to the restoration of 12 basins in 16 municipalities and the protection of more than 785 hectares with 83.1 km of isolations, we also continued the conservation activities agreed as part of the agreement with Farallones National Natural Park of Cali and Las Hermosas National Natural	Estimated investment in ReverdeC project was COP 5,349 million and by the agreement with the Farallones National Natural Park of COP 2,000 million over five years, of which COP 510 million was invested in 2016.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	climate change in four (4) categories. It was found that the most vulnerable ones (Level 1 of Vulnerability) are: Pacifico, Cauca, Antioquia 1 and Antioquia 2, which coincide with the Organization's plants and projects.							Park, which contribute to the conservation of these important Colombian ecosystems.	
Change in temperature extremes	In a study published by USAID and UPME an increase in temperature to Colombia for the next 30 years it is identified. The increase in air temperature has an effect on the expansion of the transmission lines, the operation of equipment in power plants, plus the energy	Increased operational cost	>6 years	Direct	More likely than not	Medium	Analysis of financial implications has not been carried out.	The company has changed its strategy to address the risks and opportunities from climate change, which is why in addition to working in the diversificación the mix of energy, including solar power generation photovoltaic have been established other lines of business, where it plays a key role installing solar	For 2016, the company's investment in innovation projects amounted to COP 5800 million.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	demand increases by cooling and ventilation needs.							panels in cities, homes and companies	
Change in mean (average) temperature	Decreased availability of water resources : In a study published by USAID UPME and an increase in temperature to Colombia for the next 30 years it is identified. The same study from models determines that in 2050 will have a decrease between 6 and 8% of water contributions to the watersheds	Reduction/disruption in production capacity	>6 years	Direct	Very likely	High	Analysis of financial implications has not been carried out.	From the new business area manages this risk seeking technological and hydrological complementarity to the generation mix, optimizing the mix between thermal, hydro generation and renewable energy for new businesses in which it penetrates. Furthermore, when hydro projects are evaluated generation projections are made based on historical hydrological records.	For 2016, the company's investment in innovation projects amounted to COP 5800 million.

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
Induced changes in human and cultural environment	Opposition against energy projects: There are advocacy groups at local and international level against the construction of power plants, because their GHG emissions and also other possible impacts	Reduced demand for goods/services	3 to 6 years	Direct	More likely than not	Low-medium	Celsia has not done the analysis, not consider it necessary for now	The organization has chosen not to set up action plans for this risk because it is not prioritized in their risk matrix	No estimated yet

---

CC5.1d

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

CC5.1e

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

**CC5.1f**

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

**Further Information**

**Page: 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**

- Opportunities driven by changes in regulation
- Opportunities driven by changes in physical climate parameters
- 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
Voluntary agreements	We have identified opportunities related to	Increased demand for existing products/services	>6 years	Direct	Very likely	Medium	The option of selling CERS or VCS bonds at the moment	Given the low prices of carbon markets, the	45 Million COP corresponding to audit

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	climate change under the CDM and VCS certification schemes totaling 292.189 tonCO <sub>2</sub> eq / year, some projects are not currently certified.						is not considered profitable by the virtual disappearance of the market by low costs per ton of carbon (US \$ 0.17), which means an income of about \$ 150 millions of COP	organization is considering to discount from their inventory the CDM and VCS bonds that are not committed.	services for emission discount and market registration
Other regulatory drivers	Greater restrictions in terms of energy intensity: In 2014 the Ministry of Mines and Energy endorses the statement 902 which commits the mining and energy sector with the reduction of carbon footprint. For Electric Power establishes the promotion and development of	Reduced operational costs	3 to 6 years	Direct	Virtually certain	Medium	Analysis of financial implications has not been carried out.	Continuous monitoring of variables that may generate adverse regulatory changes for the company is executed in order to prevent and mitigate its effects. Proactive work is also advancing with guilds, participating in panel discussions for the	Cost of management have been estimated but they are confidential.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	national energy efficiency policy for the operation of the SIN (National Interconnected System); the promotion of unconventional sources of non-renewable energy in the SIN and non-interconnected areas (ZNI).							regulation of law and as member of the climate change board and the Colombian strategy of low carbon development (ECDBC) of the Ministry of Environment and Sustainable Development.	
Renewable energy regulation	Law 1715 of May 2014, is aimed at the development and use of unconventional sources of energy within the Colombian energy system. This law gives tax incentives to businesses that run all kinds of renewable energy projects	Investment opportunities	1 to 3 years	Direct	Virtually certain	Medium-high	Financial implications have been estimated but they are confidential because they are projects in early evaluation.	The company reformulated its strategy, giving prominence to renewable energies within their business. That is how in the short term going to have 250 MW installed solar power in Colombia and Panama and increase 70 MW wind capacity at	Cost of management have been estimated but they are confidential

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								Costa Rica. 2025 will be expected to have a total of 2392 MW installed capacity from renewable sources, including power generation plants hydraulics, solar and wind	
Other regulatory drivers	The 1819 Law of 2016 (Tax Reform) includes the possibility of making discounts on taxed income to companies over the amounts invested in environmental control and improvement projects that correspond to voluntary initiatives. The Law also considers possible	Reduced capital costs	1 to 3 years	Direct	Virtually certain	Medium-high	Analysis of financial implications has not been carried out.	Study and application of the requirements to access the benefits	Cost of management have been estimated but they are confidential

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	exemptions to the Value Added Tax on the import of machinery and equipments for the development of projects registered in the National Registry of Reduction of Greenhouse Emissions.								

**CC6.1b**

Please describe your 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
Other physical climate opportunities	Celsia has identified business opportunities with the growth of its portfolio through the acquisition and development of renewable energy	New products/business services	>6 years	Direct	About as likely as not	Medium	Financial implications have been estimated but they are confidential because they are projects in	In the short term, we intend to have 250 MW installed solar power in Colombia and Panama and increase 70 MW wind capacity at	Cost of management have been estimated but they are confidential

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	projects. Power generation from renewable sources has advantages, because they have lower emissions making them more respectful of the environment. Also, power generation allows energy autonomy. On the other hand, from the voluntary carbon markets, these projects may be included within schemes that allow the marketing of these bonds.						early evaluation	Costa Rica. 2020 will be expected to have a total of 2392 MW of installed capacity from renewable sources, including power generation plants hydraulics, solar and wind.	

**CC6.1c**

Please describe your 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
--------------------	-------------	------------------	-----------	------------------	------------	---------------------	----------------------------------	-------------------	--------------------

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Changing consumer behavior	Our technological progress in the electricity sector continues apace, and the transformations that have been announced for years as future matters to be prepared for are now a reality. The costs of non-conventional renewable energy are coming increasingly close to those of traditional technologies; distributed generation, such as solar panels on roofs, are now the norm in many parts of the world. It will not be long before we do not have consumers so much as prosumers, a term that refers to the role of combining the production and consumption of energy: there will be energy	New products/business services	>6 years	Direct	Virtually certain	High	The financial implications of changes in consumer behavior due to the climate change variable have not been estimated.	At Celsia, we have closely followed these developments, and have prepared ourselves to take advantage of the opportunities that arise out of them. We have therefore decided to include, as a fundamental part of our strategy, the development of new businesses geared toward meeting the needs of evermore active and well-informed clients. This last point is what has allowed us to change how we see the business, and we are concentrating on building a customer-facing company, managed not on the basis of assets like a traditional public utilities company, but as a modern	Cost of management have been estimated but they are confidential

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>efficiency models; home and office automation applications; electric vehicles that as well as transporting us, will serve as batteries for injecting and taking energy from the network based on the preferences and needs of prosumers; efficient lighting; new energy storage services for homes and as a complement to current networks; as well as more information and interaction with clients hour after hour, among many other aspects that are revolutionizing the industry and business models alike</p>							<p>company where plants, lines and substations are just one means of improving people's quality of life. We plan to implement this through three new business units:            Cities- Sustainability: the portfolio will consist of photovoltaic solar energy, efficient heating, cooling (thermal districts) and lighting, backup power and electrical installations.            Companies- Productivity: the portfolio will consist of photovoltaic solar energy, home automation or energy automation, lighting plants, networks and substations            Homes- Wellbeing: the protafolio will</p>	

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								consist of photovoltaic solar energy, batteries that store energy services automation or automated energy management in the home, and funding options for these platforms	

---

CC6.1d

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

CC6.1e

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

CC6.1f

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

**Further Information**

**Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading**

**Page: CC7. Emissions Methodology**

---

**CC7.1**

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

<b>Scope</b>	<b>Base year</b>	<b>Base year emissions (metric tonnes CO2e)</b>
Scope 1	Thu 01 Jan 2015 - Thu 31 Dec 2015	2858179
Scope 2 (location-based)	Thu 01 Jan 2015 - Thu 31 Dec 2015	63059
Scope 2 (market-based)		

---

**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**

Please select the published methodologies that you use

ISO 14064-1

---

**CC7.2a**

If you have selected "Other" in CC7.2 please provide details of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

---

**CC7.3**

Please give the source for the global warming potentials you have used

Gas	Reference
CO2	IPCC Fifth Assessment Report (AR5 - 100 year)
CH4	IPCC Fifth Assessment Report (AR5 - 100 year)
N2O	IPCC Fifth Assessment Report (AR5 - 100 year)
HFCs	IPCC Fifth Assessment Report (AR5 - 100 year)
PFCs	IPCC Fifth Assessment Report (AR5 - 100 year)
SF6	IPCC Fifth Assessment Report (AR5 - 100 year)

---

**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
Natural gas	0.05529	metric tonnes CO2e per GJ	Colombia: FECOC (Emission factors for Colombian fuels) - UPME (Mining and Energy Planning Unit) - Ministry of Mines and Energy of the Republic of Colombia.
Diesel/Gas oil	0.07419	metric tonnes CO2e per GJ	Colombia: FECOC (Emission factors for Colombian fuels) - UPME (Mining and Energy Planning Unit) - Ministry of Mines and Energy of the Republic of Colombia.
Motor gasoline	0.06932	metric tonnes CO2e per GJ	Colombia: FECOC (Emission factors for Colombian fuels) - UPME (Mining and Energy Planning Unit) - Ministry of Mines and Energy of the Republic of Colombia.
Liquefied petroleum gas (LPG)	0.06553	metric tonnes CO2e per GJ	Colombia: FECOC (Emission factors for Colombian fuels) - UPME (Mining and Energy Planning Unit) - Ministry of Mines and Energy of the Republic of Colombia.
Electricity	0.192	metric tonnes CO2e per MWh	Colombia: XM Compañía de Expertos en Mercados S.A. ESP (operator of the National Interconnected System (SIN) and administrator of the Colombian Wholesale Energy Market (MEM))
Diesel/Gas oil	0.741	metric tonnes CO2e per GJ	Emission factor used to Central america: It was taken from IPCC
Distillate fuel oil No 1	0.0774	metric tonnes CO2e per GJ	Emission factor used to Central america: It was taken from IPCC
Charcoal	0.0946	metric tonnes CO2e per GJ	Emission factor used to Central america: It was taken from IPCC
Motor gasoline	0.0693	metric tonnes CO2e per GJ	Emission factor used to Central america: It was taken from IPCC
Electricity	0.205	metric tonnes CO2e per MWh	The emission factor used was determined through in-house calculus which are detailed in the carbon footprint report which is appended to this document.
Electricity	0.038	metric tonnes CO2e per MWh	Costa Rica: For Costa Rica was taken from "Factores de emisión de gases efecto invernadero: emissions factors greenhouse gas " of the National Metrology Institute, it is attached

#### Further Information

---

**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**

2491512.77

---

**CC8.3**

**Please describe your approach to reporting Scope 2 emissions**

Scope 2, location-based	Scope 2, market-based	Comment
We are reporting a Scope 2, location-based figure		

---

**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
51370.9		

**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

**CC8.4a**

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of location-based Scope 2 emissions from this source	Relevance of market-based Scope 2 emissions from this source (if applicable)	Explain why the source is excluded

**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
Scope 1	More than 5% but less than or equal to 10%	Data Management	For total calculation of uncertainty, a tool published by GHG Protocol, using aggregate statistics methods for estimating an uncertainty percentage based on the parameters of each inventory and the individual uncertainties of activity data and factors emission, is used. The emission factors used for calculating GHG inventory of Celsia are taken for different types of fuel from official sources such as the Mining Energy Planning Unit (UPME) of the Ministry of Mines and Energy for Colombia based plants and from IPCC for the other countries and other emission sources. The uncertainty percentages made for each activity data and emission factors are taken from those generated by IPCC for the evaluation of uncertainty for national GHG inventories.
Scope 2 (location-based)	More than 5% but less than or equal to 10%	Other: annual emission factor	Uncertainty in Scope 2 is associated with the annual emission factor of electricity used for calculating GHG inventory of Celsia. Scope 2 is taken from XM experts, operator of the energy market in Colombia who publishes the factor of national
Scope 2 (market-based)			For Colombia, Panamá and Costa Rica do not apply the market-based method, as costumers can not choose the type of energy they buy because the energy generated in the country, in the interconnected areas, it goes the same interconnected system that is transmitted and delivery to the final user.

**CC8.6**

**Please indicate the verification/assurance status that applies to your reported Scope 1 emissions**

Third party verification or assurance process in place

**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 process	Complete	High assurance	<a href="https://www.cdp.net/sites/2017/29/45029/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.6a/Verification%20Colombia.pdf">https://www.cdp.net/sites/2017/29/45029/Climate Change 2017/Shared Documents/Attachments/CC8.6a/Verification Colombia.pdf</a>	All	ISO14064-3	100
Annual process	Complete	High assurance	<a href="https://www.cdp.net/sites/2017/29/45029/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.6a/Verification%20CCA.PDF">https://www.cdp.net/sites/2017/29/45029/Climate Change 2017/Shared Documents/Attachments/CC8.6a/Verification CCA.PDF</a>	All	ISO14064-3	100

#### CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emission Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission

#### 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

#### 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 process	Complete	High assurance	<a href="https://www.cdp.net/sites/2017/29/45029/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.7a/Verification%20Colombia.pdf">https://www.cdp.net/sites/2017/29/45029/Climate Change 2017/Shared Documents/Attachments/CC8.7a/Verification Colombia.pdf</a>	All	ISO14064-3	100
Location-based	Annual process	Complete	High assurance	<a href="https://www.cdp.net/sites/2017/29/45029/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.7a/Verification%20CCA.PDF">https://www.cdp.net/sites/2017/29/45029/Climate Change 2017/Shared Documents/Attachments/CC8.7a/Verification CCA.PDF</a>	All	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

---

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

---

**Further Information**

**Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2016 - 31 Dec 2016)**

---

CC9.1

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

Yes

---

CC9.1a

**Please break down your total gross global Scope 1 emissions by country/region**

Country/Region	Scope 1 metric tonnes CO2e
Colombia	1473742.2
Panama	1017728.9
Costa Rica	41.66

---

CC9.2

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

- By business division
- By facility
- By GHG type
- By activity

---

**CC9.2a**

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)
CELSIA Colombia	1473742.2
CELSIA Central America	1017770.59

---

**CC9.2b**

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
Administrative CELSIA	37484.00		
Zona Franca CELSIA	1169168.90		
Meril�trica	263871.60		
R�o Piedras	2.16		

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
Hidromontañas	3.74		
EPSA Administrativo	517.40		
EPSA Distribución	1645.26		
Alto y Bajo Anchicayá	339.26		
Alto Tulúa	2.62		
Amaime + Nima I y II + Rio Cali I y II	50.77		
Calima	72.70		
Hidroprado	133.60		
Rriofrío 1 y 2	4.14		
Rumor	2.76		
Salvajina	434.21		
Complejo termoeléctrico Colón	1017325.11		
Dos Mares	114.10		
Administrativo Panamá	360.14		
Planta Eólica Guanacaste	46.75		
Cucuana	9.06		

**CC9.2c**

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CO2	2483602
CH4	4622
N2O	1606
HFCs	734
PFCs	0

GHG type	Scope 1 emissions (metric tonnes CO2e)
SF6	1017

---

**CC9.2d**

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
Energy generation	2451581
transmission and distribution of energy	1645.00

---

**Further Information**

**Page: CC10. Scope 2 Emissions Breakdown - (1 Jan 2016 - 31 Dec 2016)**

---

**CC10.1**

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

Yes

---

**CC10.1a**

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes 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)
Colombia	51295.36	0	25654	
Panama	70.43		0.29	
Costa Rica	5.09		0.13	

**CC10.2**

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

- By business division
- By facility
- By activity

**CC10.2a**

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

Business division	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Celsia Colombia	51295.36	

Business division	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Celsia Central America	75.52	

**CC10.2b**

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Celsia Administrativo	108.51	
Zona Franca Celsia	2631.90	
Merilectrica	150.30	
Rio Piedras	2.65	
Hidromontañas	1.09	
EPSA Administrativo	756.27	
EPSA transmission and distribution	46318.37	
Alto y Bajo Anchicayá	1004.97	
Alto Tulúa	9.03	
Amaime + Nima I y II + Rio Cali I y II	17.98	
Calima	132.82	
Hidroprado	132.37	
Rriofrío 1 y 2	0.07	
Rumor	0.06	
Salvajina	28.97	
Complejo termoeléctrico Colón	0	
Dos Mares	13.42	
Administrativo Panamá	57.01	

Facility	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Planta Eólica Guanacaste	5.09	

---

#### CC10.2c

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

Activity	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Energy generation	4131	
transmission and distribution of energy	46318	

---

#### Further Information

Page: **CC11. Energy**

---

#### CC11.1

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

More than 70% but less than or equal to 75%

---

#### 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

4407559

---

**CC11.3a**

Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Diesel/Gas oil	2059036
Motor gasoline	4200
Natural gas	4268662
Charcoal	2344323

---

**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
No purchases or generation of low carbon electricity, heat, steam or cooling accounted with a low carbon emissions factor	0		In Colombia the energy generated enters into an interconnected system where electricity from different sources (hydro, thermal, minor sources, solar, etc.) is mixed. In 2016, the percentage of generation coming from renewable sources was 52%.

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
5969361.4	26844.7	7125000.0	3684000.0	21866.7	In 2016, we focused on project development, mainly through three sources of electric power generation: Hidro: The Organization currently has two hydroelectric projects in the prior consultation stage in the department of Antioquia, Colombia: Porvenir II, which will have a capacity of 352 MW, and San Andrés de Cuerquia with 19.9 MW. Together, they will contribute 371.9 MW to the Company's generation capacity Solar: At Celsia, we see great opportunities in solar power generation. Therefore, we have decided to develop organizational capacity for the construction and operation of this technology.

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
					Additionally, we have focused on an ambitious expansion plan of this kind of project and we hope to build a capacity of 250 MW in the medium term in Colombia and Panama. Wind: In 2016, we kept working on the different studies and processes of permits and licenses to make the expansion of our new wind power plant by 60 to 70 MW feasible

**Further Information**

**Page: 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

**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
Emissions			

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
reduction activities			
Divestment			
Acquisitions			
Mergers			
Change in output			
Change in methodology			
Change in boundary			
Change in physical operating conditions			
Unidentified			
Other	13	Decrease	In 2016, we generated 7,125 GWh of energy, 627 GWh less than in 2015. Despite the El Niño phenomenon, hydroelectric power generation increased 10% from 2015. The difference in generation occurred in thermal power generation due to the change in weather conditions with the end of El Niño from 2015 to 2016 and the depletion of the hydroelectric units' reservoirs in the country and decreasing the centralized dispatch for the Zona Franca Celsia and Merilétrica power which led to less generation than in 2015.

---

**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
0.67	metric tonnes CO2e	3790000	Location-based	15.21	Decrease	The increase in consolidated revenue at the close of 2016 compared to 2015 is mainly explained by the increase in energy sales, decrease in thermal energy generation due to the end of the El Niño phenomenon in 2016, and less sales of gas surpluses during the year.

### 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
0.36	metric tonnes CO2e	Other: MWh	7125000	Location-based	6.08	Decrease	We are committed to the management of greenhouse gas (GHG) emissions and in 2016, we made commitments regarding climate change in our Environmental Policy, which include diversification of the generation matrix, promotion of alternative non-conventional energy with low carbon emissions, improvement of operating efficiency

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
							and adequate emissions management. We have proposed a 25% reduction in the intensity of GHG emissions related to electric power generation by 2025 (2015 as the base year), which involves limiting growth of thermal power plants using coal and reinforcing the commitment to increase wind, solar and hydroelectric power generation in the Company. In 2016, the total generation was 7.125 GWh, 627 GWh less than the generation obtained in 2015. Despite El Niño phenomena, hydraulic generation had an increment of 10% respect to 2015. The difference was related to Thermal and Eolic sources due to change in climate during the last stage of the Niño where the dam-water release of the hydraulic sources affected the dispatch of Zona Franca and Merilectrica Thermal Power Stations, and the drop of wind velocities at the Guanacaste Eolic Park

**Further Information**

**Page: CC13. Emissions Trading**

**CC13.1**

**Do you participate in any emissions trading schemes?**

No, and we do not currently anticipate doing so in the next 2 years

**CC13.1a**

Please complete the following table for each of the emission trading schemes in which you participate

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership

#### CC13.1b

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

#### CC13.2

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

Yes

#### CC13.2a

Please provide details on the project-based carbon credits originated or purchased by your organization in the reporting period

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits canceled	Purpose, e.g. compliance
Credit origination	Hydro	1206: MONTANITAS HYDROELECTRIC PROJECT	VCS (Verified Carbon Standard)	478670		No	Voluntary Offsetting
Credit	Hydro	2600: Amaime Minor Hydroelectric	CDM (Clean Development	209971		No	Voluntary

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits canceled	Purpose, e.g. compliance
origination		Power Plant	Mechanism)				Offsetting
Credit origination	Hydro	3570 : Alto Tuluá Minor Hydroelectric Power Plant	CDM (Clean Development Mechanism)	280434		No	Voluntary Offsetting
Credit origination	Hydro	3599 : Bajo Tuluá Minor Hydroelectric Power Plant	CDM (Clean Development Mechanism)	290010		No	Voluntary Offsetting
Credit origination	Hydro	9830: Cucuana Hydroelectric Power Plant	CDM (Clean Development Mechanism)	617750		No	Voluntary Offsetting
Credit origination	Hydro	1173: SAN ANDRES HYDROELECTRIC PROJECT	CDM (Clean Development Mechanism)	473170		No	Voluntary Offsetting
Credit origination	Wind	4147: Guanacastel Wind Farm	CDM (Clean Development Mechanism)	95225	97500	Yes	Voluntary Offsetting

---

#### Further Information

**Page: 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 CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services	Relevant, calculated	32214.14	GHG Protocol- Corporate value chain (scope 3) accounting and reporting standard. Emission factor of Ecoinvent 2.2: paper, newsprint, at plant [CH]	50.00%	A total of 604.592.581USD were spent in purchases in 2016, of which natural gas, electric energy, diesel fuel and gasoline purchases were disregarded because the emissions associated to each were accounted for within Scope 1 and 2. Other goods and services, such as costs, backups, insurance and policies were not taken into consideration in the calculus because they don't have any associated emissions. Therefore, 21% of all purchases made during the year were analyzed in the measurement, which correspond to 125.462.080 USD. These purchases are equivalent to 31.864,40 TonCO2eq. In some plants we give fuel to the Army. Within the accounting of the company, this fuel appears as a purchase, but not used for the operation, it is donated to the army, who uses it for its security activities and its the reason to be included in this category. Whereas the army indirectly provides a monitoring and safety service to facilities of some of the plants and facilities located in vulnerable areas, emissions associated with donated fuel are located above the organization (emissions along the existence of the company) in the modality of service. For this purpose, 349,74 tons of CO2e were estimated.
Capital goods	Not evaluated				
Fuel-and-energy-	Relevant,	334602.02	GHG Protocol- Corporate value chain (scope	50.00%	This category includes emissions related to the

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
related activities (not included in Scope 1 or 2)	calculated		3) accounting and reporting standard: To calculate emissions by extraction of each type of fuel, emission factors of Ecoinvent 2.2 were used for the following activities: diesel, low-sulphur, at regional storage [RER], petrol, 5% vol. ethanol, from biomass, at service station [CH], liquefied petroleum gas, at service station [CH], natural gas, high pressure, at consumer [CH].		production of fuels and the company's acquired and consumed energy in the year in question which are not included in Scope 1 or 2. Emissions caused by fuel combustion or by the company's electricity consumption are included in Scope 1 or 2, therefore, they are excluded in category 3. Scope 1 includes emissions caused by fuel combustion from sources that belong to or are under control of the company. Scope 2 includes emissions caused by fuel combustion, purchased and consumption by the company, for energy generation, vapor, heating and refrigeration. Emissions caused by fuel combustion or by the company's electricity consumption are included in Scope 1 or 2, therefore, they are excluded in category 3. Scope 1 includes emissions caused by fuel combustion from sources that belong to or are under control of the company. Scope 2 includes emissions caused by fuel combustion, purchased and consumption by the company, for energy generation, vapor, heating and refrigeration. Of total emissions in this category, 97% of them are associated with the extraction of Natural Gas and diesel - ACPM for heat generation in generating plants in Colombia
Upstream transportation and distribution	Not evaluated				

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Waste generated in operations	Relevant, calculated	392.49	GHG Protocol- Corporate value chain (scope 3) accounting and reporting standard. Emission factors of Ecoinvent 2.2; for disposal (disposal, municipal solid waste, 22.9% water, to sanitary landfill [CH], disposal, municipal solid waste, 22.9% water, to municipal incineration [CH], disposal, hazardous waste, 0% water, to underground deposit [DE]) and for waste transport (transport, municipal waste collection, lorry 21t [CH], transport, lorry >32t, EURO3 [RER]). Amounts of ordinary and hazardous wastes are recorded for each installation from the environmental management system of the company, and these values are applied to emission factors named according to the disposal method used and distances to quantify emissions from transport to the disposal site that were reported for each of the facilities included in the limits.	50.00%	This category includes emissions caused by employee transportation for company related activities (in company owned or third party operated vehicles, such as planes, trains, buses or passenger vehicles). In 2015, Celsia's corporate plane was transferred to Interejecutiva S.A, a company that has operational control over this asset and provides services to Celsia as required. Therefore, this plane is included in this category. For the reporting period, private flights carried out in Celsia's corporate plane used 24.599 gallons of JetA1 fuel which is quantified in this scope.
Business travel	Relevant, calculated	665.50	"GHG Protocol- Corporate value chain (scope 3) accounting and reporting standard. This category includes business flights for Celsia and EPSA and fuel for rented vehicles operated by third parties for business transport services. To calculate emissions associated to business flights, purchasing records of tickets on commercial flights by 2016 were recovered	70.00%	This category includes emissions caused by employee transportation for company related activities (in company owned or third party operated vehicles, such as planes, trains, buses or passenger vehicles). In 2015, Celsia's corporate plane was transferred to Interejecutiva S.A, a company that has operational control over this asset and provides services to Celsia as required. Therefore, this plane is included in this

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
			<p>from the shopping area, and emissions were evaluated in the carbon calculator icao.int (International Civil Aviation Organization) for each distance traveled.</p> <p>For emissions from outsourced transport, service provider reports the fuel used per trip to the organization for calculation purposes. For other services such as taxi, an estimate of fuel per number of trips and average travel distance is performed. For the calculation of 2016, the corresponding fuel to EPSPA's third-parties vehicles are included (other than Renting), inter-company vehicles, taxis, boats and rented boats (used in operating plants with reservoirs) and rented vehicles of administrative areas.</p>		<p>category. For the reporting period, private flights carried out in Celsia's corporate plane used 24.599 gallons of JetA1 fuel which is quantified in this scope.</p>
Employee commuting	Relevant, calculated	316.33	<p>"For collecting data used in calculations in this category, surveys about transportation habits of employees of both organizations, and specifically tailored to the distance and location of the different sites to which employees must travel daily, were developed. Surveys were conducted by 122 partners of Celsia and 464 collaborators of EPSPA representing 42% of all employees in the organization. These surveys were analyzed to determine distances and modes of transport used (including taxi, private car, bus, mass transit systems and bike).</p>	30.00%	<p>"For the collection of the data used in the calculus of this category, surveys on employee's (from both organizations) transport habits were designed and adapted to the specific distances and locations of the different operation sites to which employees commute on a daily basis. The surveys were carried out by 279 Celsia employees; 18% of the company's total payroll. 72% of the emissions in this category are generated by private vehicle mobilization. Over the coming years we expect to obtain data in the survey of travel habits from a higher percentage of employees of the organization in order to</p>

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
			Moreover, EPSA implemented a program of ""recognized kilometers"" (to employees who use their own car for mobilization because of activities related to their work functions), which covers their fuel recorded per mileage by each of the employees under this system."		quantify emissions in this category up to 100%"
Upstream leased assets	Not evaluated				
Downstream transportation and distribution	Not evaluated				
Processing of sold products	Not evaluated				
Use of sold products	Not evaluated				
End of life treatment of sold products	Not evaluated				
Downstream leased assets	Not evaluated				
Franchises	Not evaluated				
Investments	Not evaluated				
Other (upstream)	Not evaluated				
Other	Not				

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
(downstream)	evaluated				

**CC14.2**

**Please indicate the verification/assurance status that applies to your reported Scope 3 emissions**

No third party verification or assurance

**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 (%)

**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

---

**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
Purchased goods & services	Change in boundary	999	Increase	
Fuel- and energy-related activities (not included in Scopes 1 or 2)	Change in boundary	15	Increase	
Waste generated in operations	Change in boundary	78	Decrease	
Business travel	Change in boundary	46	Decrease	

---

**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

---

**CC14.4a**

Please give details of methods of engagement, your strategy for prioritizing engagements and measures of success

Climate change poses a challenge for Celsia, because it can cause changes in weather conditions, and said alterations could have a potential impact on the rivers' water levels, on the soil, on the basins and on the behavior of the seasons in the year, which would affect the Company's operations. Therefore, we are committed to the management of greenhouse gas (GHG) emissions and in 2016, we made commitments regarding climate change in our Environmental Policy, which include diversification of the generation matrix, promotion of alternative non-conventional energy with low carbon emissions, improvement of operating efficiency and adequate emissions management. We have proposed a 25% reduction in the intensity of GHG emissions related to electric power generation by 2025 (2015 as the base year), which involves limiting growth of thermal power plants using coal and reinforcing the commitment to increase wind, solar and hydroelectric power generation in the Company.

**CC14.4b**

To give a sense of scale of this engagement, please give the number of suppliers with whom you are engaging and the proportion of your total spend that they represent

Type of engagement	Number of suppliers	% of total spend (direct and indirect)	Impact of engagement
Other:	5	21%	In 2016, Celsia measured its Scope 3 carbon footprint, in which it included the purchase of goods and services. This category includes all upstream emissions of the production of purchased or acquired products in the year in question (that is, from cradle to door). Therefore, these products include the goods (tangible products) and services (intangible products). This calculus was made using the total value of purchases made in 2016, of which purchases of items such as natural gas, electric energy, diesel fuel and gasoline were discarded, because the emissions associated to these were already quantified in Scope 1 and 2. Other goods and services such as costs, back ups, insurance policies and others were not taken into consideration because they don't have any associated emissions. Therefore, a total of 21% of total purchases made in the reporting period were analyzed which correspond mostly to the emissions of 5 suppliers.

**CC14.4c**

Please explain why you do not engage with any elements of your value chain on GHG emissions and climate change strategies, and any plans you have to develop an engagement strategy in the future

---

**Further Information**

**Module: Sign Off**

**Page: CC15. 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
Beatriz Eugenia Orozco	Generation and socio environmental leader	Environment/Sustainability manager

---

**Further Information**

**Module: Electric utilities**

**Page: 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	Date range
2025	Wed 01 Jan 2025 - Wed

Year ending	Date range
	31 Dec 2025
2016	Fri 01 Jan 2016 - Sat 31 Dec 2016
2015	Thu 01 Jan 2015 - Sun 31 Dec 2017

---

**Further Information**

**Page: 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 CO2e)	Emission intensity (metric tonnes CO2e/MWh)
2015	2388	7752	2921238	0.38
2016	2387	7125	2491417	0.35
2025	3375	14986	4273687	0.29

---

**Further Information**

**Page: EU2. Individual Country Profiles - Colombia**

---

**EU2.1**

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

Oil & gas (excluding CCGT)  
CCGT  
Hydro  
Other renewables

---

**EU2.1a**

**Coal - hard**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)

---

**EU2.1b**

**Lignite**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)

---

**EU2.1c****Oil & gas (excluding CCGT)**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	167	459	297185	0.65
2016	166	410	211068	0.51
2025	166	0	0	0.00

---

**EU2.1d****CCGT**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	610	2917	1473329	0.51
2016	610	2166	1115057	0.51
2025	610	4915	2530242	0.51

---

**EU2.1e**

**Nuclear**

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

Year ending	Nameplate capacity (MW)	Production (GWh)
-------------	-------------------------	------------------

---

**EU2.1f****Waste**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
-------------	-------------------------	------------------	---	--

---

**EU2.1g****Hydro**

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

Year ending	Nameplate capacity (MW)	Production (GWh)
2015	1077	2769

Year ending	Nameplate capacity (MW)	Production (GWh)
2016	1077	3021
2025	1449	6093

---

### EU2.1h

#### Other renewables

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

Year ending	Nameplate capacity (MW)	Production (GWh)
2015	0	0
2016	0	0
2025	530	1546

---

### EU2.1i

#### Other

Please complete the following table 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 <sub>2</sub> e)	Emissions intensity (metric tonnes CO <sub>2</sub> e/MWh)

---

**EU2.1j****Solid biomass**

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	0	0	0	0
2016	0	0	0	0
2025	0	0	0	0

---

**EU2.1k****Total thermal including solid biomass**

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	777	3376	1770515	0.52
2016	776	2576	1326125	0.51
2025	776	4915	2530242	0.51

---

**EU2.11****Total figures for this country**

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 CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	1854	6145	1770515	0.29
2016	1853	5597	1326125	0.24
2025	2755	12554	2530242	0.20

---

**Further Information**

Other renewables energies, include solar and wind generation.

**Page: EU2. Individual Country Profiles - Costa Rica**

---

**EU2.1**

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

Other renewables

---

**EU2.1a**

**Coal - hard**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
-------------	-------------------------	------------------	---	--

---

**EU2.1b**

**Lignite**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
-------------	-------------------------	------------------	---	--

---

**EU2.1c**

**Oil & gas (excluding CCGT)**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
-------------	-------------------------	------------------	---	--

---

**EU2.1d****CCGT**

Please complete the following table 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 <sub>2</sub> e)	Emissions intensity (metric tonnes CO <sub>2</sub> e/MWh)

---

**EU2.1e****Nuclear**

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

Year ending	Nameplate capacity (MW)	Production (GWh)

---

**EU2.1f****Waste**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
-------------	-------------------------	------------------	---	--

---

**EU2.1g**

**Hydro**

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

Year ending	Nameplate capacity (MW)	Production (GWh)
-------------	-------------------------	------------------

---

**EU2.1h**

**Other renewables**

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

Year ending	Nameplate capacity (MW)	Production (GWh)
2015	50	261
2016	50	198
2025	120	481

---

**EU2.1i**

**Other**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
-------------	-------------------------	------------------	---	--

---

**EU2.1j**

**Solid biomass**

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	0	0	0	0
2016	0	0	0	0
2025	0	0	0	0

---

**EU2.1k**

**Total thermal including solid biomass**

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	0	0	0	0
2016	0	0	0	0
2025	0	0	0	0

#### EU2.11

##### Total figures for this country

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 CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	50	261	34	0.0001
2016	50	198	48	0.0002
2025	120	481	115	0.0002

#### Further Information

The renewable energy in this country is wind.

---

**EU2.1**

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

Coal - hard  
Oil & gas (excluding CCGT)  
CCGT  
Hydro  
Other

---

**EU2.1a**

**Coal - hard**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	120	638	851148	1.33
2016	120	587	672459	1.15
2025	120	610	698229	1.15

---

**EU2.1b**

**Lignite**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
-------------	-------------------------	------------------	---	--

**EU2.1c**

**Oil & gas (excluding CCGT)**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	160	15	19714	1.33
2016	160	8	11109	1.33
2025	0	0	0	0

**EU2.1d**

**CCGT**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
-------------	-------------------------	------------------	---	--

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	0	0	0	0
2016	0	0	0	0
2025	140	660	339872	0.515

---

**EU2.1e**

**Nuclear**

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

Year ending	Nameplate capacity (MW)	Production (GWh)

---

**EU2.1f**

**Waste**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)

---

**EU2.1g****Hydro**

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

Year ending	Nameplate capacity (MW)	Production (GWh)
2015	119	405
2016	119	465
2025	119	644

---

**EU2.1h****Other renewables**

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

Year ending	Nameplate capacity (MW)	Production (GWh)

---

**EU2.1i****Other**

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

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	87	297	202051	0.68
2016	87	297	202152	0.68
2025	87	0	0	0

---

#### EU2.1j

##### Solid biomass

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	0	0	0	0
2016	0	0	0	0
2025	0	0	0	0

---

#### EU2.1k

##### Total thermal including solid biomass

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	367	950	1072914	1.13
2016	367	893	885719	0.992
2025	347	1270	1038101	0.817

## EU2.11

### Total figures for this country

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 CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	486	1355	1072914	0.79
2016	486	1358	885719	0.652
2025	500	1951	1038101	0.532

## Further Information

In other renewable energies, we have solar energy.

**Page: EU3. Renewable Electricity Sourcing Regulations**

## EU3.1

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

---

#### EU3.1a

Please provide the scheme name, the regulatory obligation in terms of the percentage of renewable electricity sourced (both current and future obligations) and give your position in relation to meeting the required percentages

Scheme name	Current % obligation	Future % obligation	Date of future obligation	Position in relation to meeting obligations

---

#### Further Information

**Page: EU4. Renewable Electricity Development**

---

#### EU4.1

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		51.00%	Hydrological and wind power plants

---

#### EU4.2

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		71.00%	2025	EBITDA of solar energy and additional renewable energy from hydro and wind projects

#### 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		70.00%	2025	The estimated Capex corresponds to wind generation projects, hydro and solar as a percentage of the company's investment from 2016 to 2025.

#### Further Information

CDP 2017 Climate Change 2017 Information Request