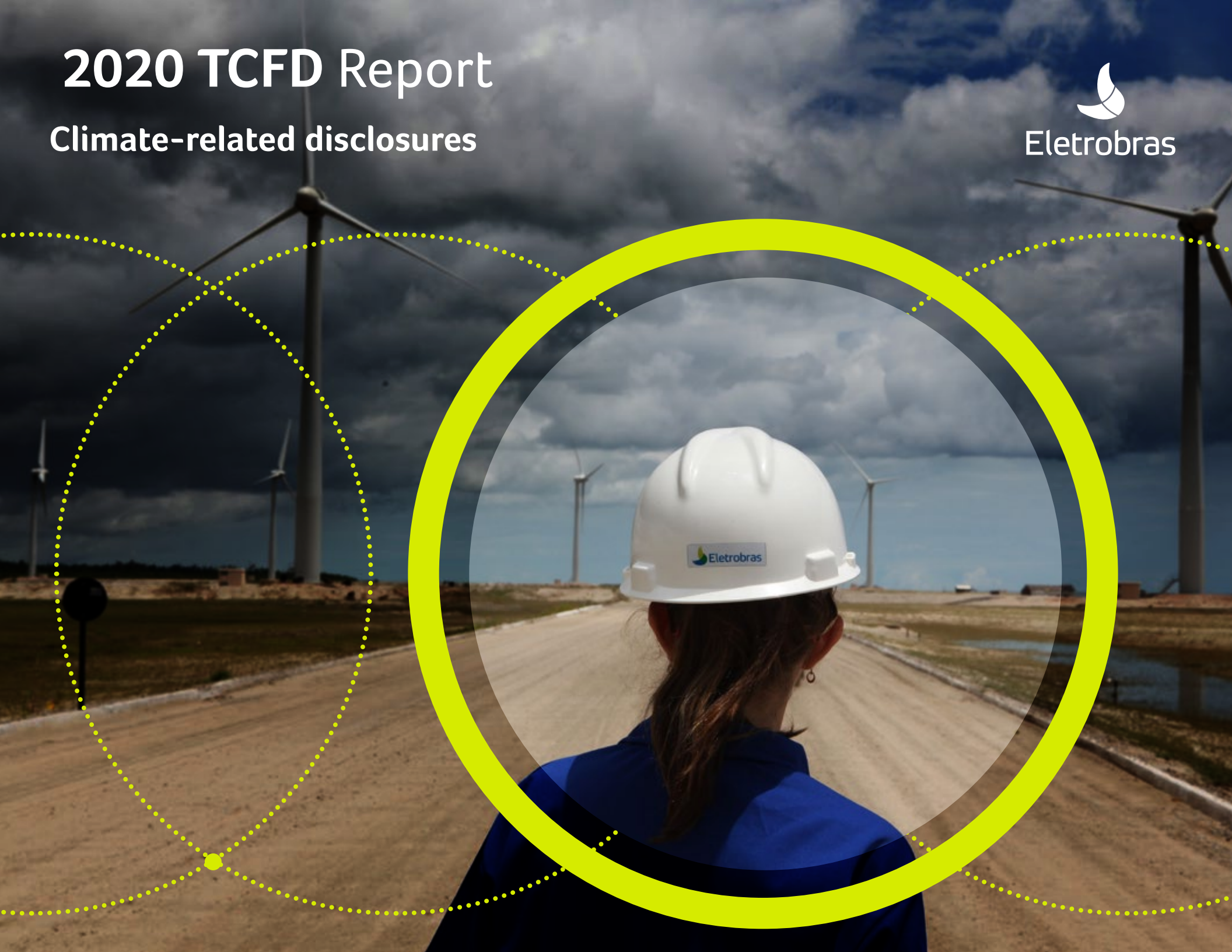
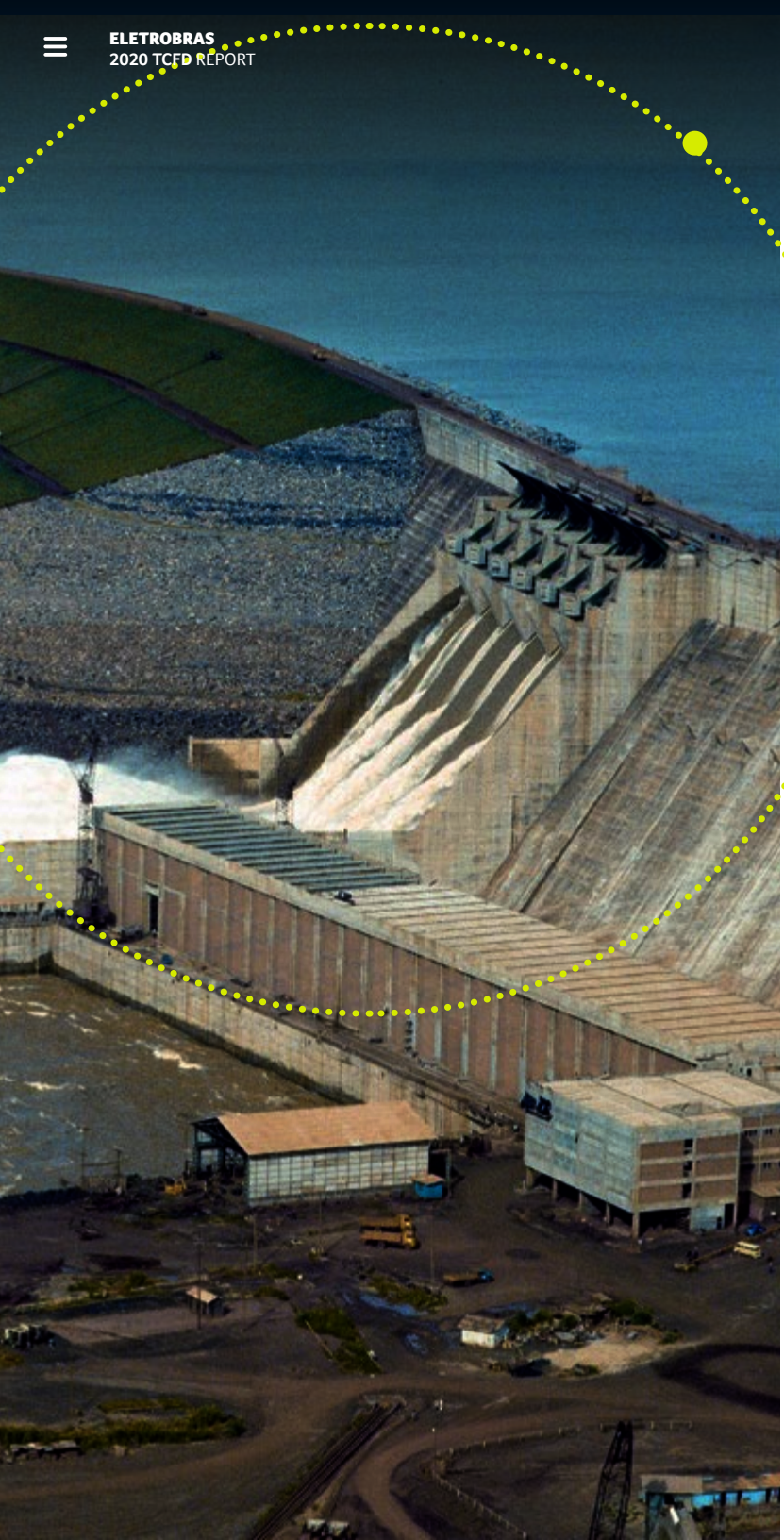
2020 TCFD Report

Climate-related disclosures

Eletrobras





CONTENTS

Foreword

The attentions of the private sector and local and foreign investors are increasingly turning to issues surrounding climate change and its impacts on business. There is no denying the science of the climate crisis and the effects we are already experiencing in our daily lives—climate change is becoming increasingly perceptible in different settings, markets and industries.

The growing focus that key financial players are giving to ESG (environmental, social and governance) issues is certainly a welcome development, and one that can benefit companies such as Eletrobras and its subsidiaries, which have been integrating social and environmental aspects into their business for more than a decade.

The Eletrobras Group has published greenhouse gas emissions inventories since 2009. We monitor our emissions and have set ambitious targets to reduce them. Our holding company, for example, has set a target to achieve net-zero emissions within 2021.

As part of this aspiration, we have implemented a range of programs and projects to mitigate and offset our emissions.

Climate change risks—like other risks in our risk matrix—are identified and managed using stringent risk management processes. They are addressed in our long-, medium- and short-term strategic plans and in related initiatives. We also see climate change as a source of opportunities, with 97% of our generation assets producing clean and low-emission electricity. This can put us in a favorable position in the near future as carbon credit markets gain traction.

Eletrobras has solid environmental governance and welcomes the opportunity to publish this report in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), the CDP Climate Change and Water Security Questionnaires, and the Global Reporting Initiative (GRI) Standards. This TCFD report provides the opportunity to describe in greater detail how we have integrated climate change issues into our strategy and approach to ensuring the sustainability and resilience of our business.

Our aim with this report is to enhance transparency around our initiatives and disclosures for our stakeholders, and strengthen our reporting practices to ensure comparability with the international market.

Luiz Augusto P. A. Figueira
Chief Corporate Management & Sustainability Officer

Introduction

Eletrobras (Centrais Elétricas Brasileiras S.A.) is the leading generation and transmission company in Latin America. With water as the primary energy source for our generation assets, climate change-related risks have naturally been included in our risk matrix. Managing those risks has become increasingly crucial to achieving more sustainable business results.

Eletrobras Subsidiaries in Brazil

1. Eletronorte
2. Chesf
3. Amazonas GT
4. Furnas
5. CGT Eletrosul
6. Itaipu Binacional
7. Cepel
8. Eletronuclear
9. Eletropar

VISION – To be an innovative, clean energy company, recognized for excellence and sustainability

ONE OF THE **5 LARGEST HYDROPOWER GENERATORS IN THE WORLD** BY INSTALLED CAPACITY

29% of Brazil's capacity

39.6% North
21.3% Northeast
20.2% Southeast
16.1% South
2.9% Midwest

97% low-emission energy sources

91% hydro

4% nuclear

3% thermal

2% wind and solar

The Eletrobras Group is committed to continuously mitigating negative impacts from its operations and supporting the transition to a new development model in Brazil based on a low-carbon economy. In our 2020 Annual Report, we describe how we have enhanced our climate strategy by integrating it more effectively with ESG issues; our priority Sustainable Development Goals—including SDG 13 – *Climate Action*; and initiatives aligned with the Paris Agreement (COP 21/2015).

Climate-change agenda timeline

2010
Submitted first CDP Climate Change Questionnaire

2010
Named to the B3 Carbon Efficient Index (ICO2)

2011
Submitted first CDP Water Security Questionnaire

2012
Launched the Eletrobras Group Commitment on Climate Change and incorporated it into our Environmental Policy

2016
Signed Position Paper on Carbon Pricing Mechanisms

2017
Signed the Open Letter – Private Sector Support for Carbon Pricing in Brazil

2018
Adopted the TCFD recommendations

2020
Upgraded to a Leadership-level score of "A-" for our climate change and water security disclosures to the CDP, in recognition of our alignment with industry best practices

Green bonds for transmission projects

Eletrobras has obtained a Second Party Opinion from Vigeo Eiris to issue green bonds for our transmission lines.

We had previously obtained CBI (Climate Bonds Initiative) Certification and a Second Opinion for wind and solar projects.

Engaging with suppliers around climate change

Eletrobras is ranked on the CDP Supplier Engagement Leaderboard among the top 7% for supplier engagement on climate change.

Eletrobras is a member of several external forums where we share good practices and contribute to discussions around climate change, including the Brazilian Business Council for Sustainable Development's (CEBDS) Technical Chamber on Energy and Climate Change, the Global Compact's Caring for Climate initiative, and the Brazilian Forum on Climate Change.

Reinforcing our commitment to transparency, and in accordance with the CDP Technical Note on the TCFD, the Eletrobras Group is publishing its first report on how climate change-related risks are integrated into our strategy and how they are managed and mitigated.

The structure of our 2020 report has been designed to address each of the TCFD's 11 recommended disclosures across four thematic areas: governance, strategy, risk management, and metrics and targets.

Governance

Board's oversight of climate-related risks and opportunities

We seek to ensure that a robust approach is taken to monitoring climate-related risks and opportunities, with the direct, effective and constant involvement of our Board of Directors and senior management. Eletrobras's approach to managing these risks is detailed in our policies and guidelines, and is reflected in our short-, medium- and long-term strategic plans.

Our Strategy, Governance & Sustainability Committee, which reports directly to the Board of Directors, is responsible for monitoring and overseeing performance against our climate-related targets, the 2030 Agenda and our Sustainability Policy.

The Board of Directors meets ordinarily on a monthly basis and extraordinarily whenever necessary. The Strategy, Governance & Sustainability Committee meets ordinarily at least on a monthly basis, following an approved annual schedule, and extraordinarily as necessary.

The governance mechanisms through which climate-related issues are integrated include reviewing and guiding strategy, major plans of action, risk management policies, annual budgets, and business plans, as well as setting performance objectives, and monitoring and overseeing progress against goals and targets.

Climate change is ever present on senior management's agenda. In 2020 our "Executive Dialogs" development program, which comprises a range of development courses for the members of Group companies' boards of directors, oversight boards and executive boards, included a training module on Climate Change and Its Effects, to refresh participants' knowledge about the most significant recent developments surrounding climate change.

The Board's role in assessing and managing climate-related risks and opportunities

Our Strategy, Governance & Sustainability Committee receives monthly reports on matters related to sustainable performance, prepared by our Chief Corporate Management & Sustainability Officer, the highest-level executive position responsible for our climate agenda. The duties of the Chief Corporate Management & Sustainability Officer include assessing and managing climate-related risks and opportunities through quarterly reports.

This officer is responsible for ensuring high-performance sustainability governance by implementing internationally recognized processes, procedures and tools; reviewing the sustainability aspects of our Strategic Plan and Business & Management Master Plans (PDNG) prior to approval by the Board of Directors; and monitoring implementation of agreed projects and targets, and recommending remediation measures as necessary.

At Eletrobras, sustainability governance is cross-cutting and covers a wide range of issues related to ESG. Climate-related issues are managed by a

system that consists of three core elements: our Environmental Policy, our Environmental Committee, and the Environmental Module of our Corporate Sustainability Disclosures System (IGS System).

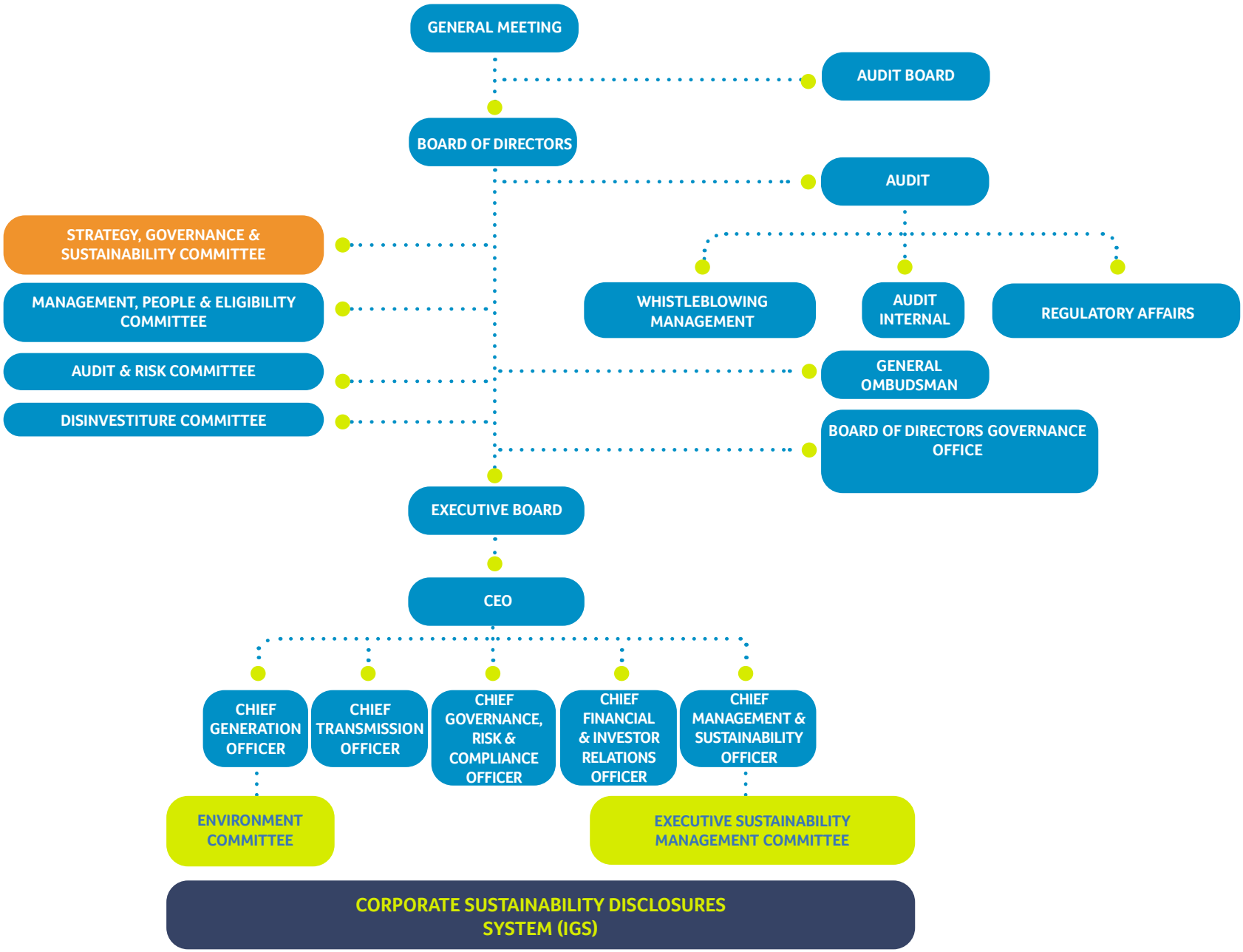
Eletrobras's Environmental Policy provides guidance on addressing social and environmental issues related to our projects and assets. The Policy reiterates our commitment to environmental stewardship and Brazil's sustainable development, and contains specific guidance on climate change.

Our Environmental Committee (CMA) is a forum for discussing practices and developing studies and guidance on social and environmental issues. The Committee is composed of representatives from our subsidiaries' environmental departments, who meet at least three times per year. The Committee also has subject-matter working groups including a Climate Strategy working group responsible for preparing our Greenhouse Gas Emissions Inventory, recommending indicators and action plans to meet targets, and conducting assessments on carbon pricing, our carbon footprint and adapting to climate change.

Implemented in 2010, the environmental module of our Corporate Sustainability Disclosures System (IGS System) is a strategic tool that we use to monitor hundreds of environmental indicators across the Eletrobras Group—including indicators related to energy, water, biodiversity, waste and compliance—that help to inform improvements in environmental governance.

Alongside this framework for assessing and managing climate-related risks and opportunities, the Board of Directors is also supported by initiatives directly under the oversight of our Strategy, Governance & Sustainability Committee. These include assessments on carbon pricing and our carbon footprint, our subsidiaries' vulnerability and adaptation to climate change, and climate-related scenarios. These assessments are based on the estimates and assumptions underlying our strategic planning, which reflect our expectations about current and future financial and non-financial trends over a horizon of 15 years.

MANAGEMENT STRUCTURE



Strategy

Our Strategic Plan 2020-2035 establishes a set of guidelines and objectives aimed at our growth and modernization in line with emerging trends in the power sector. The Strategic Plan is subdivided into Business & Management Master Plans (PDNG) with a short/medium-term horizon of five years.

Our 2020-2024 PDNG has been developed with a focus on the sustainable development of the business. The materiality assessment informing the PDNG covers national and international trends, and guidelines related to SDGs 7, 8, 9, 10, 13 and 16 (as shown on page 11), which have been prioritized by the Eletrobras Group. These are addressed in the PDNG through a set of climate change indicators and targets, including reducing emissions, electricity consumption and the use of fossil fuels by our vehicle fleet.

Our Sustainability Program 4.0, a component of the PDNG, comprises a set of 12 projects, of which two are directly related to climate change management within Eletrobras (learn more on page 21). Progress is monitored on a quarterly basis by the Strategy, Governance & Sustainability Committee.

The PDNG, in turn, informs the development of Business & Management Plans for each Group company.

Overview of our climate strategy

01 A unified strategy for mitigating and offsetting GHG emissions at all Eletrobras Group companies.

02 Prioritize renewable and low-emission generation projects.

03 Identify climate change risks and opportunities for the business.

04 Maintain a systematic and continuous process of improving emissions management, in line with industry best practices.

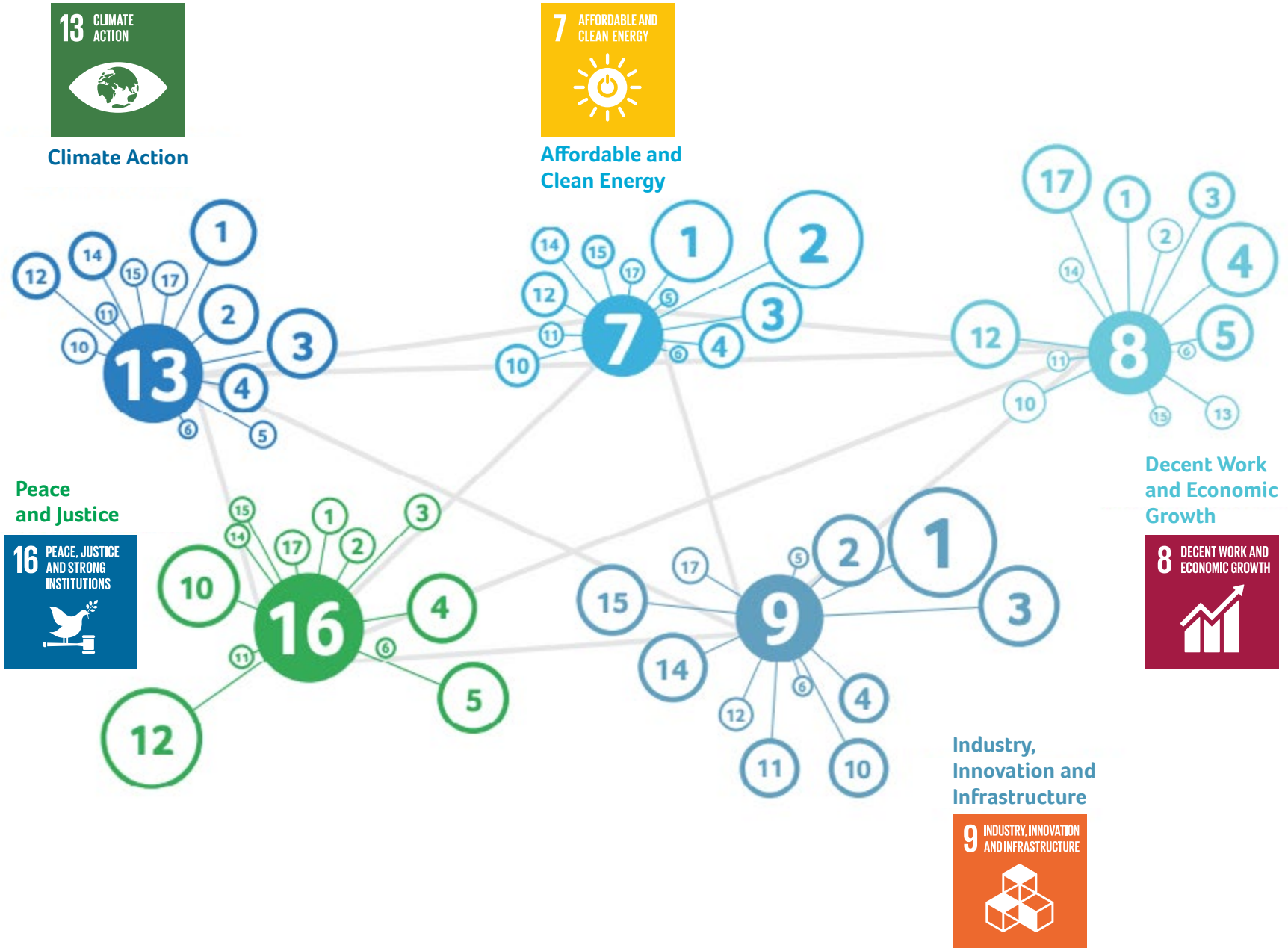
05 Ensure transparent disclosure and stakeholder access to climate change data.

06 Support studies, research and new technologies that contribute to reducing impacts and to the energy transition.

07 Work with suppliers and customers in the value chain, helping them manage their emissions.

08 Monitor regulatory developments and support the formulation of regulatory frameworks for climate change in Brazil.

Our priority SDGs in 2020



Risks and opportunities over the short, medium, and long term

Based on the nature of our assets and available evidence of the timing of climate change-related impacts, the Eletrobras Group defines short term as a period of up to 5 years; medium term as a period of 5 to 10 years, and long term as a period of 10 to 30 years.

Climate-related risks and opportunities primarily affect our direct operations, and are managed periodically using an integrated and multidisciplinary approach spanning all Eletrobras Group companies, covering the short, medium and long-term horizons.

TYPE OF RISK	Physical, chronic
RISK	Shifts in precipitation and variability in weather patterns
AREA	Operating costs and revenue
POTENTIAL IMPACT	Lost revenue as a result of reduced generation volumes
TIME HORIZON	Medium term
LIKELIHOOD	Probable
MAGNITUDE OF IMPACT	Medium-low
ESTIMATED FINANCIAL IMPACT	R$ 2,144 billion
EXPLANATION OF FINANCIAL IMPACT	Unfavorable hydrologic conditions could adversely affect our hydroelectric generation assets and prevent us from maintaining our contract capacity, causing financial impacts. The financial impact estimate is based on potential impacts for 2021 before applying any mitigation measures and our trading strategies, which would make the company less vulnerable to these risks, as determined in terms of the opportunity cost assessed within the Brazilian power sector.
COST OF RESPONDING TO THE RISK	R$ 55 million

MITIGATION AND ADAPTATION MEASURES

Our approach to addressing hydrological risks includes participation in Brazil's Electricity Reallocation Mechanism (MRE) for hydroelectric dams and Eletrobras measures such as electricity reserves for hedging purposes.

We have also renegotiated our hydrological risks in connection with the shared generation output from wholly-owned hydropower dams that we sell within the Regulated Contracting Environment (ACR), as was the case with the Balbina dam.

In addition, upon the renewal of expiring concessions which represented a significant part of the guaranteed capacity in our portfolio, hydrological risks were transferred to electric utilities within the National Grid. Examples of this include our Marimbondo and Xingó dams. We estimate that at a protection cost of R$ 55 million, we could mitigate the financial impact from R$ 2,144 billion to R$ 1,571 billion, generating a net benefit of R$ 518 million.

TYPE OF RISK	Political and legal
RISK	Carbon Pricing Mechanisms
AREA	Operating costs and revenue
POTENTIAL IMPACT	Higher direct costs
TIME HORIZON	Short term
LIKELIHOOD	Probable
MAGNITUDE OF IMPACT	Low
ESTIMATED FINANCIAL IMPACT	R$ 407,277 million
EXPLANATION OF FINANCIAL IMPACT	The financial implications for this risk have been estimated based on emissions, generation and financial data for thermal power stations owned by Eletrobras Group companies Amazonas GT, CGT Eletrosul, Eletronuclear and Furnas, assuming US$ 20/tCO_2e. Our Mauá 3 thermal power station accounts for 40.7% of the financial impact, followed by Candiota at 31.7%, Santa Cruz at 14.5%, Aparecida at 13% and Angra I and II at 0.06%.
COST OF RESPONDING TO THE RISK	R$ 216 million

MITIGATION AND ADAPTATION MEASURES

Climate change regulations are among the potential developments in Brazil's current policymaking landscape. Eletrobras could be negatively impacted by new regulations for GHG-intensive industries or activities, or by the adoption of carbon pricing as an efficient and effective approach to reducing emissions. To anticipate these shifts, Eletrobras Group companies conduct annual carbon pricing assessments to determine the potential financial impacts on their operations. These studies are conducted internally by our Environmental function, and costs are defrayed on the basis of the number of man-hours spent by each employee involved.

Eletrobras has also directed efforts toward modernizing our thermal power plants to improve performance and efficiency and reduce GHG emissions and air pollution. For example, we implemented combined cycle technology at the Santa Cruz thermal power station, adding 175 MW of generation capacity to the National Grid, and an upgrade at the Candiota III thermal power station that will improve coal quality and increase the power output from the plant by approximately 10%, while reducing consumption of this fossil fuel. The cost of our response to this risk is directly proportional to the amount of effort in implementing these initiatives.

In addition, we have directed investment toward renewable energy, helping to keep our carbon emissions low. The Eletrobras Group has set a target of keeping the share of clean energy sources (solar, wind, hydro and nuclear) in our portfolio above 96%; our PDNG 2021-2025 incorporates an Energy Transition Program as part of these efforts. Our holding company has also set a target of achieving net zero GHG emissions from 2021.

Internal carbon price

- Current price and change: based on the European Union's carbon market, Eletrobras assumes a price of 20.00 USD/ tCO_2 (1 USD = 5.05 BRL at 6/10/21)
- Type of internal carbon price: shadow price

TYPE OF RISK	Physical, acute
RISK	Increased severity and frequency of extreme weather events such as cyclones and floods
AREA	Operating costs and revenue
POTENTIAL IMPACT	Higher direct costs
TIME HORIZON	Long term
LIKELIHOOD	Virtually certain
MAGNITUDE OF IMPACT	Low
ESTIMATED FINANCIAL IMPACT	The financial impact is yet to be determined, but is related to our transmission assets and includes tower damage, structural and operational damage, power outages and expenses on reestablishing power and on any fines.
COST OF RESPONDING TO THE RISK	Under assessment

MITIGATION AND ADAPTATION MEASURES

We are unable to specify the cost of the response, but a number of measures are being planned to reduce risks, such as keeping a minimum inventory of spare parts in storage; early warning systems; engineering assessments of equipment, activities and road maintenance; electrician training; partnerships with other power sector companies; improving minimum inventories; monitoring weather warnings during work shifts; improving and expanding our weather monitoring network; keeping a budget for emergency situations; preventing outages during extreme weather events; compiling data on our wind farms; updating and replicating risk assessments; obtaining refunds for the costs of repairing damage caused by extreme weather events; and umbrella agreements for transmission line repairs.

TYPE OF OPPORTUNITY	Market
OPPORTUNITY	Access to new markets – carbon credits
AREA	Operating costs and revenue
POTENTIAL IMPACT	Increased revenues through access to new and emerging markets.
TIME HORIZON	Short term
LIKELIHOOD	Probable
MAGNITUDE OF IMPACT	Medium-low
POTENTIAL FINANCIAL IMPACT	R$ 35,489,765
EXPLANATION OF POTENTIAL FINANCIAL IMPACT	Climate guidance provided in the Eletrobras Group Environmental Policy helps to embed this topic in our strategy and procedures. Some of the positive financial implications have been calculated based on emissions avoided (over a period of 10 years) by our Jirau (an estimated 4,362,995 tCO_2e), Teles Pires (an estimated 7,073,640 tCO_2e) and Santo Antônio (an estimated 4,015,196 tCO_2e) hydroelectric dams. This total was determined based on current CER prices in Europe (0.36 euro / CER) translated into reais at the current exchange rate of R$ 6.38).
IMPLEMENTATION COST	R$ 3,737,079

IMPLEMENTATION STRATEGY

In 2012, the Jirau Dam was registered under the United Nations Framework Convention on Climate Change (UNFCCC). In 2020, carbon credits generated by this dam were used to offset 1,080 metric tons of GHG emissions during the Rio Open tennis tournament. The cost of this initiative was R$ 1,209,000, which was used toward consulting to secure registration with the UNFCCC Executive Board.

Since 2015 our Teles Pires Dam has been authorized to sell carbon credits. In 2020, 1,473,640 tCO_2e were sold to companies in Brazil, India and the Netherlands. These credits were issued for electricity generated from November 2015—the date the dam started operation—to February 2017. This major hydroelectric project invested R$ 879,903 in consulting services to secure registration from the Clean Development Mechanism (CDM) UN Executive Board. Another R$ 1,648,176 was invested in consulting services to obtain registration for the Santo Antônio Dam in 2013.

TYPE OF OPPORTUNITY	Market
OPPORTUNITY	Access to new markets – I-RECs (International Renewable Energy Certificates)
AREA	Operating costs and revenue
POTENTIAL IMPACT	Increased revenues through access to new and emerging markets
TIME HORIZON	Short term
LIKELIHOOD	Highly probable
MAGNITUDE OF IMPACT	Medium-low
POTENTIAL FINANCIAL IMPACT	R$ 14,006,929
EXPLANATION OF POTENTIAL FINANCIAL IMPACT	The potential financial impact is in the form of I-RECs made available for sale—approximately 8 million MWh. Four potential options for using our I-RECs have been identified: via public auctions (sale), bilateral negotiations, or participation in end beneficiary auctions, or for neutralizing our own emissions (reducing self-consumption).
IMPLEMENTATION COST	R$ 26,550

IMPLEMENTATION STRATEGY

In I-REC transactions and in assessing the feasibility of the I-REC business, there are certain variable costs incurred in certifying and registering the project with the I-REC platform as well as costs that will be incurred at a later time. We currently have nine plants that are approved and eligible to issue I-RECs.

Green Hydrogen

We have a number of green hydrogen R&D projects ongoing, including projects in collaboration with other market players.

Green Finance

Eletrobras has been certified to issue green bonds for wind and solar generation projects, as well as for transmission projects. This certification not only expands our sources of funding, but also distinguishes companies that are compliant with the stringent requirements for the green finance market.

Carbon Pricing

Power-sector companies around the world have adopted internal carbon prices for different purposes (ahead of new regulations, to inform decisions on new investments, to respond to investors, etc.).

Impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning

Climate-related risks and opportunities influence our strategy and financial planning. We have a low-carbon transition plan (comprising initiatives as part of our Sustainability Program 4.0, as discussed on page 21) that incorporates qualitative and, in the future, quantitative scenario analyses. These analyses have been conducted using the models developed by the Intergovernmental Panel on Climate Change (IPCC).

The impacts from climate-related risks and opportunities affect different aspects of our business:

- **Products and services**: Eletrobras's strategy is articulated in our PDNG, which incorporates measures designed to address issues with the potential to impact the generation and transmission business, such as precipitation patterns and water and wind resource availability. Our strategy aims to support Brazil's transition to an increasingly clean and low-carbon energy mix by prioritizing investment in clean energy and in implementing practices and processes that can help to mitigate climate change. These issues are addressed in the "Energy Transition" and "GHG Emissions Offsets and Environmental Protection" projects within Eletrobras's Sustainability Program 4.0, launched in 2020.
- **Supply chain and value chain**: As an integral part of our strategy, we establish business relationships with suppliers whose values align with the Eletrobras Group's environmental commitments. In executing this strategy, we use stringent criteria in supplier selection that cover, among other sustainability aspects, any issues with the potential to affect our operations and reputation. Eletrobras's "Sustainable Sourcing" project, a component of our Sustainability Program 4.0, aims to implement best practices in supplier management that can support mutual development underpinned by the principles of ethics, integrity and business sustainability. These practices include an integrated due diligence process that covers environmental aspects and seeks to identify any conduct at variance with Eletrobras's commitments, allowing us to take increasingly effective action to mitigate impacts.
- **R&D investment**: To support the decarbonization of Brazil's energy mix, our PDNG contains specific guidance on creating an innovative ecosystem through investment in R&D toward increasing energy efficiency and developing new generation technologies. As part of these efforts, our Inova Eletrobras program aims to improve our management of R&D projects, and works in collaboration with the Brazilian Power Sector Research Center (CEPEL) on R&D, science and technology projects that are aligned with our business goals.
- **Operations**: Our operations can have a greater or lesser impact depending on their scale and where they are located. With this in mind, our business decisions take sustainability aspects into account, including environmental impacts and climate effects, in line with the strategic goals outlined in our PDNG.
- **Revenue**: The impact from hydrological risk due to unfavorable climate conditions has been estimated and can affect our revenues, as described on page 19. Regulatory risk can also affect our revenues, in particular any regulatory changes creating a carbon tax in Brazil (for a list of material risks, see page 18).

Strategy resilience

In terms of the resilience of our strategy to climate-related risks and opportunities, our plans take into consideration a transition to a low-carbon economy consistent with a 1.5 °C or lower temperature-rise scenario, and scenarios consistent with increased physical climate-related risks.

Risk management

How we identify and assess risks

The Eletrobras Group's Integrated Risk Management System uses a well-established model that aims to prevent events from occurring which could adversely affect our strategic objectives and our ability to generate and preserve value, and to provide transparent information to the market and shareholders.

Risks are identified and mapped in a Corporate Risk Matrix with the participation of business managers at Group companies. Climate change is among the business risks listed in this matrix, as shown in the image on page 22.

In identifying these risks, we consider existing and emerging regulatory requirements related to climate change. Eletrobras is subject to the Brazilian National Policy on Climate Change, introduced by Law no. 12 187/2009 and regulated by Decree no. 7 390/2010, which establishes requirements on planning investments in new projects, and is an important input into assessments of these types of risk. In addition, current analyses suggest a potential correlation between climate-related and regulatory risks (as described on the following page).

Eletrobras has adopted the risk classification frameworks established in ISO 31000: 2018 and COSO ERM (of the Committee of Sponsoring Organizations of the Treadway Commission). We also draw guidance from Decree no. 8 945/2016, Law no. 13 303/2016, Law no. 12 846/2013, and the Sarbanes-Oxley Act. The risk classification process begins with identifying and compiling into a matrix the business, financial, operational and compliance risks to which Group companies are exposed. These risks are then analyzed, addressed, monitored and communicated to stakeholders (as illustrated in the figure on page 23). Through this process, our operations teams are informed about climate issues related to their processes and activities.

After identifying risks, the next steps are:

- **Identifying and describing potential impacts from those risks**, such as fines, penalties, loss of competitiveness, disinvestment, loss of trust, and loss of market value, assets, operations capabilities and revenues;

- **Classifying risks by level of potential impact**: Eletrobras classifies the risks to which it is exposed as critical, high, medium, low or minimal based on the magnitude of impact and the likelihood of occurrence. Risks are also classified into three impact categories (financial, economic and reputation).

Substantial strategic and financial impacts are assessed on the basis of the financial losses they would cause. Impacts are considered critical if financial losses would exceed R$ 225 million. Other classification criteria used are the extent to which the relevant risks would affect our strategic goals and our reputation.

The risks determined to be the most material within Eletrobras Group companies are prioritized and addressed by action plans prepared based on technical recommendations developed by the Corporate Risk Management and Internal Controls functions in collaboration with business managers, taking account of the level of exposure validated by Management. The risk owner is responsible for monitoring the effectiveness of action plans and reporting on progress to the risk management department.

Eletrobras determines the materiality of climate-related risks (especially hydrological and regulatory risks) using a prioritization process in which senior management considers the company's risk appetite, the results of previous analyses, and business-specific data. The risk types that have been prioritized in our climate assessments are listed below.

TYPE OF RISK	RELEVANCE	RATIONALE
Current regulations	Not material	Eletrobras is subject to the Brazilian National Policy on Climate Change, introduced by Law no. 12.187/2009 and regulated by Decree no. 7 390/2010 (learn more on page 18). Impacts related to this risk are not material as we are already compliant with current laws and there is no evidence of regulatory developments that could require us to revisit our related processes.
Emerging regulations	Material	Brazil has committed to reduce its GHG emissions by 37% by 2025, and by an additional 43% by 2030 (COP 21/2015). As an important player in the Brazilian energy market, the Eletrobras Group can play an important role in helping to meet these national commitments. We conduct an annual assessment to measure the impacts from any needed adaptations to our operations and of any new laws or regulations relating to GHG emissions. These assessments provide important inputs into our strategic plan and actions to mitigate risks. New regulations governing the carbon credit market are an example of emerging regulations with the potential to positively or negatively impact our operations. We annually conduct carbon pricing assessments to anticipate these developments.
Technology	Material	New technologies are an important aspect considered in our risk assessments, especially technologies related to new sources of clean energy in addition to hydro, which could help to reduce our exposure to climate-related risks. However, the cost of these technologies could be prohibitive. All Eletrobras Group companies invest in research and development, a prime example being CGT Eletrosul (see page 35).
Legal	Not material	Eletrobras has not classified legal risks as material, as in Brazil there are currently no laws establishing or allowing for legal action against companies for negative impacts related to climate change. Regulatory developments of this nature are unlikely in the near future.
Market	Material	Hydrologic risk (which we assess every three months) is a material climate-related risk. Where the potential for unfavorable hydrologic conditions is identified, electricity contracting is modulated to create surpluses that can then be settled in the Short-Term Market at more attractive prices. We also implement corporate measures, such as electricity reserves as hedges.

TYPE OF RISK	RELEVANCE	RATIONALE
Reputation	Material	Our contribution to climate change can have a highly significant impact on our reputation. In order to prevent adverse impacts on our reputation, Eletrobras strives to be compliant at all times with best practices and regulations related to climate change. This risk could materialize if, for example, we were accused of contributing a high level of emissions from our thermal power stations. To mitigate this risk, Eletrobras regularly provides high-quality information about our operations to investors and other stakeholders, using a range of communications channels and climate change reporting methods.
Physical, acute	Material	Extreme weather events are taken into account in our climate change assessments as any adverse hydrological conditions would pose a material risk to our operations (as described previously under Market risk).
Physical, chronic	Material	Long-term adverse hydrologic conditions caused by climate change, combined with factors affecting the dispatching of generation facilities, could result in allocated electricity being substantially less than that under sales contracts, creating systemic supply problems in Brazil's power sector.

We have had appropriate mitigation measures and controls in place for hydrologic and regulatory risks since 2018, in order to reduce our vulnerability to those risks. The measures we have implemented include studies to identify and assess the vulnerability of Group companies to climate change and any needed adaptation measures, as inputs into our strategic planning process. These mitigation measures have successfully reduced our exposure to this type of risk from high to medium.

Approach to managing risks and opportunities

The risk management process at Eletrobras Group is based on our unified Corporate Risk Management Policy, whose most recent edition was approved by the Board of Directors in September 2019. The overall process is managed by the risk management and internal controls functions and risk committees at each Eletrobras Group company, which helps to provide an integrated view of and standardize the process across Group subsidiaries. Risk management information is reported to the Executive Board and Board of Directors via the Statutory Audit & Risk Committee (CAE).

Climate-related opportunities are assessed annually as part of our strategic planning process. These assessments inform proposed projects that are then assessed on feasibility and financial returns prior to implementation.

Managing Climate-Related Risks and Opportunities

MONITORING, ACTION PLANS, PROGRAMS AND ASSESSMENTS

CLIMATE GOVERNANCE

Establishing a Climate Governance structure

EMISSIONS INVENTORIES

Preparing Greenhouse Gas Emissions Inventories

RISK REVIEWS

Task force for climate-related risk reviews (mitigation and adaptation)

REDUCTION PLAN

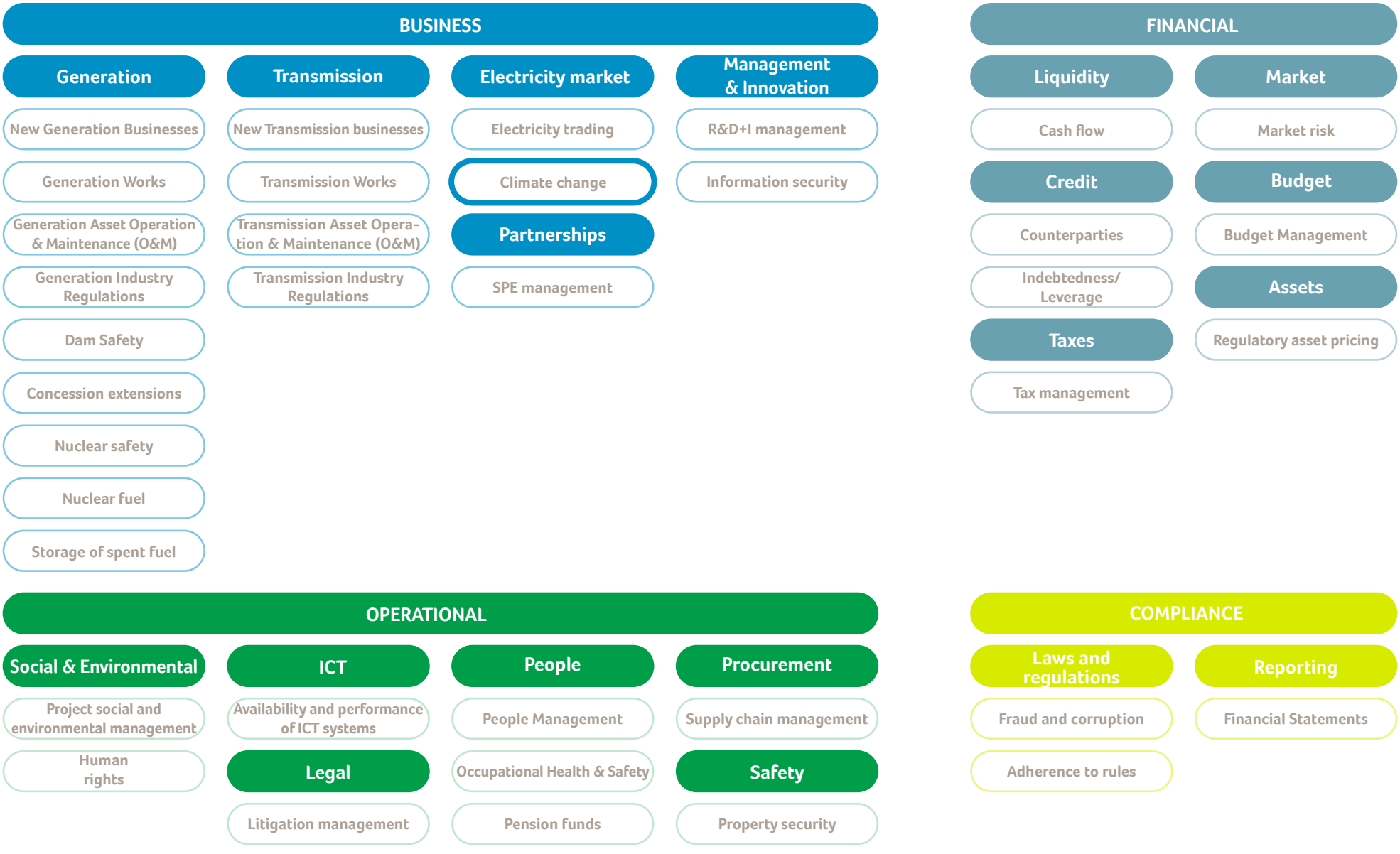
Action plans to reduce GHG emissions, electricity consumption, and the use of fossil fuels for vehicles

SUSTAINABILITY PROGRAM 4.0

- Future scenario assessments to inform climate change adaptation efforts
- Climate change vulnerability assessments
- Carbon footprint assessments for different types of power plants
- Carbon pricing studies
- Assessments to inform zero net emissions targets

Processes for integrating climate risks into the organization's overall risk management

Climate-related risks are an integral part of our overall risk management process, as shown in the Risk Matrix below.



Integrated risk management aims to prevent events from materializing which could adversely affect our strategic objectives and our ability to generate and preserve value, and to provide transparent information to the market and society. We use a five-step process to identify, assess and manage risks.

RISK MANAGEMENT: CLIMATE CHANGE

IDENTIFY RISKS AND SELECT PRIORITY RISKS → **RISK ANALYSIS AND ASSESSMENT** → **ACTION ON RISK** → **MONITORING AND REPORTING** → **COMMUNICATIONS**

ISO 31000:2018 and COSO ERM methodologies – manage any identified risks (including climate change risks).
Report quarterly to the Executive Board and Statutory Audit & Risk Committee and every six months to the Board of Directors

CLIMATE CHANGE RISKS

MITIGATION

Failing to incorporate greenhouse gas emissions management in our strategic planning and in project design/reviews, and failing to implement emissions monitoring and mitigation/offsetting measures in our generation, transmission and administrative activities.

ADAPTATION

Lack of information, studies and/or data to enable us to incorporate future climate change scenarios into our strategic planning process and in project design/reviews, and failing to implement measures to reduce our vulnerability to and mitigate impacts on Group companies' generation and transmission operations.

To learn more about our approach to risk management, read our **2020 Annual Report.**

Metrics and targets

Metrics used to assess climate-related risks and opportunities in line with our strategy and risk management process

RISK/OPPORTUNITY	FINANCIAL CATEGORY	CLIMATE-RELATED CATEGORY	METRIC	UNIT OF MEASURE	RATIONALE FOR INCLUSION/ ESTIMATED FINANCIAL IMPACT
Shifts in precipitation and variability in weather patterns	Expense	Water	Higher direct costs	R$	Climate and weather conditions directly affect inflows into our hydroelectric dams and, ultimately, their generation capacity./ R$ 2,144 billion
Carbon pricing mechanisms	Assets	GHG Emissions	Current CER prices in Europe (0.36 euro / CER) translated into reais at the current exchange rate of R$ 6.38).	R$	The most significant regulatory risk is related to the possibility of carbon taxes being introduced in Brazil. If any new emissions regulations and carbon taxes are introduced, Eletrobras could be affected as 1,695 MW of our generation capacity comes from coal, oil and gas-fired power plants./ R$ 407,277,000

RISK/OPPORTUNITY	FINANCIAL CATEGORY	CLIMATE-RELATED CATEGORY	METRIC	UNIT OF MEASURE	RATIONALE FOR INCLUSION/ ESTIMATED FINANCIAL IMPACT
Increased severity and frequency of extreme weather events, such as cyclones and floods	Expense	Adaptation to the Risk	Higher direct costs	R$	Eletrobras Eletrosul has developed a pilot study for transmission systems, titled "Enhancing Climate Services for Infrastructure Investments (CSI)", in a collaboration with the German International Cooperation Agency (GIZ). This study intersected technical data from two Eletrosul transmission lines in Brazil's southern state of Santa Catarina with climate variables affecting the tower structures, and created a project risk matrix based on current and future climate data. The climate data cover a larger area (the models include Santa Catarina as well as most of Rio Grande do Sul and Paraná, and parts of Mato Grosso do Sul). The CSI study predicted a higher frequency of cold fronts associated with strong wind and rain, and mesoscale convective complexes (MCC) associated with tornadoes. If these predictions materialize, the consequent climate-related events (especially strong winds and tornadoes) could cause damage to our structures. The magnitude of these impacts will depend on the location of the asset./Under assessment
Access to new markets	Revenue	Adaptation/ Value Creation	Increased revenues through access to new and emerging markets.	R$	Eletrobras believes that any new carbon regulations in Brazil could create opportunities. The low levels of GHG emissions from our operations, which supply clean energy at scale, would provide a number of significant competitive advantages if these regulations were to be introduced. In addition, we could benefit financially from participating in cap-and-trade systems within the Clean Development Mechanism (CDM), by trading in Certified Emissions Reductions (CER). /R$ 35,489,765

RISK/OPPORTUNITY	FINANCIAL CATEGORY	CLIMATE-RELATED CATEGORY	METRIC	UNIT OF MEASURE	RATIONALE FOR INCLUSION/ ESTIMATED FINANCIAL IMPACT
Access to new markets	Revenue	Adaptation/ Value Creation	Increased revenues through access to new and emerging markets.	R$	Eletrobras Furnas has seven plants (the Itumbiara Hydroelectric Dam, the Serra da Mesa Hydroelectric Dam, and the Fortim wind cluster, comprising five different wind farms) and Eletrobras Chesf has two plants (the Casa Nova II and Casa Nova III wind farms) that are approved and eligible to issue I-RECs (International Renewable Energy Certificates). Eletrobras believes that any new carbon regulations in Brazil could create opportunities. The low levels of GHG emissions from our operations, due to the substantial share of clean energy assets, would provide a number of significant competitive advantages if these regulations were to be introduced. In addition, we could benefit financially from participating in cap-and-trade systems within the Clean Development Mechanism (CDM), by trading in Certified Emissions Reductions (CER). Our Santo Antônio Dam is an example of an asset that would derive an economic advantage from the CDM framework./ R$ 14,006,929

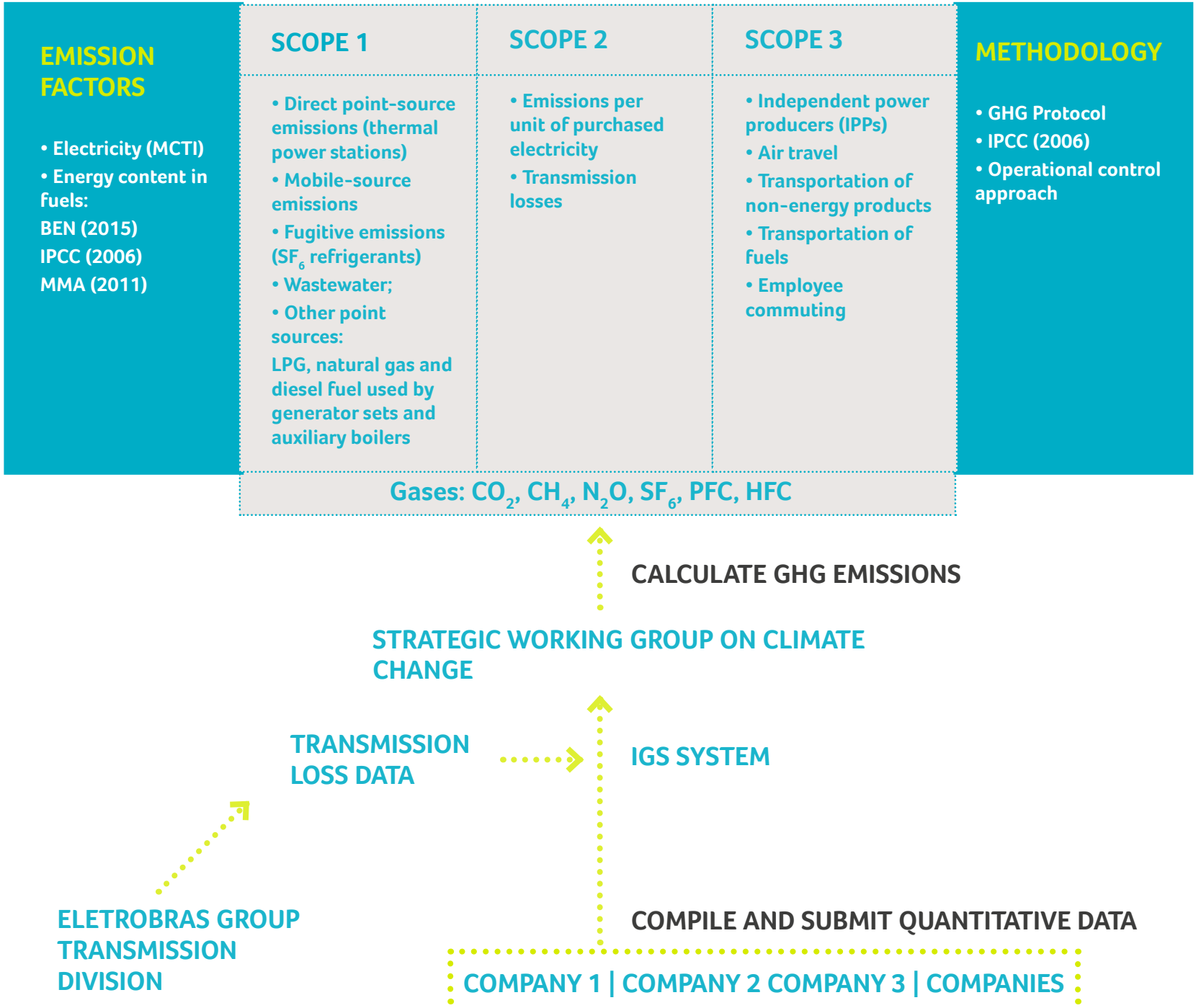
The metric informing our scenario analysis and strategic planning process, and which is used to monitor our business environment, is the IPCC's Representative Concentration Pathway, a greenhouse gas concentration trajectory adopted by the IPCC. This methodology is used in assessments of future climate change scenarios as part of the *MudClima* project (learn more on page 35).

Scope 1, Scope 2, and Scope 3 greenhouse gas (GHG) emissions, and the related risks

We publish the Eletrobras Group's Greenhouse Gas Emissions Inventories on our website to support trend analysis. *Published since 2009, these inventories are developed using the methodology recommended by the Intergovernmental Panel on Climate Change (IPCC, 2006) and the guidelines of the Greenhouse Gas Protocol (GHG Protocol - WRI, 2004), an internationally recognized approach to quantifying and communicating GHG emissions.*

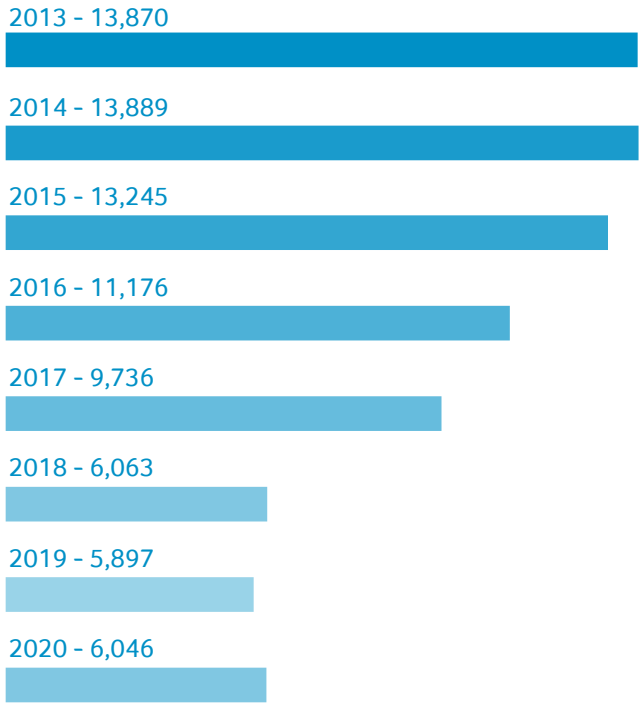
The entire historical series of emissions inventories is available on our website.

SCOPE	GHG EMISSIONS (tCO_2e)	% OF TOTAL
Scope 1	4,164,151	68.9
Scope 2	503,305	8.3
Scope 3	1,378,753	22.8
Total	6,046,210	100


EMISSION FACTORS
• Electricity (MCTI)
• Energy content in fuels:
BEN (2015)
IPCC (2006)
MMA (2011)
SCOPE 1
• Direct point-source emissions (thermal power stations)
• Mobile-source emissions
• Fugitive emissions (SF_6 refrigerants)
• Wastewater;
• Other point sources:
LPG, natural gas and diesel fuel used by generator sets and auxiliary boilers
SCOPE 2
• Emissions per unit of purchased electricity
• Transmission losses
SCOPE 3
• Independent power producers (IPPs)
• Air travel
• Transportation of non-energy products
• Transportation of fuels
• Employee commuting
METHODOLOGY
• GHG Protocol
• IPCC (2006)
• Operational control approach
Gases: CO_2, CH_4, N_2O, SF_6, PFC, HFC
CALCULATE GHG EMISSIONS
STRATEGIC WORKING GROUP ON CLIMATE CHANGE
TRANSMISSION LOSS DATA
IGS SYSTEM
ELETROBRAS GROUP TRANSMISSION DIVISION
COMPILE AND SUBMIT QUANTITATIVE DATA
COMPANY 1 | COMPANY 2 COMPANY 3 | COMPANIES

Historical emissions

TOTAL ELETROBRAS GROUP GHG EMISSIONS (IN tCO_2 THOUSAND)



GHG emissions reduced by 54% in the last 7 years

Eletrobras's average emissions intensity in generation operations is lower than the average for Brazil and other countries, as shown in the chart below:

CHINA – 684.9 KG OF CO_2/MWH GENERATED (2018)

U.S. – 417.7 KG OF CO_2/MWH GENERATED (2018)

EUROPEAN UNION – 322.8 KG OF CO_2/MWh GENERATED (2018)

BRAZIL – 78.8 KG OF CO_2/MWH GENERATED (2020)

ELETROBRAS GROUP – 38 KG OF CO_2/MWH GENERATED (2020)

Source: National Energy Balance 2021 and International Energy Agency.

Targets used to manage risks and opportunities and performance against targets

INDICATOR	UNIT	HISTORICAL			TARGETS		STATUS IN 2020	TARGETS FOR 2021 – ONGOING INITIATIVES
		2018	2019	2020	2020	2021		
Relative Generation Availability (DISPGR)	Rate	0.995	1.060	1.064	1.000	1.000	Target met	Preventive action to meet the generation availability requirements established by the regulator
GHG emissions from Eletrobras-owned thermal power plants per unit of net electricity generated (tCO_2e/ MWh)	%	0.67%	0.62%	0.60%	1.00%	NA	Target not met	Sustainability Program 4.0 and Energy Transition Project
GHG emissions from fossil fuel combustion by vehicle fleets	tCO_2e	12,141	11,374	8,835	11,340	NA	Target met	Sustainability Program 4.0 and Energy Transition Project
Reduce utility-supplied electricity consumption in administrative activities (MWh)	%	3.4%	6.61%	49.95%	0.2%	0.2%	Target met, largely due to the COVID-19 pandemic and the resulting reduction in on-site activities	0.2% reduction per year between 2018 and 2022 Sustainability Program 4.0 and Energy Transition Project
Reduction of fossil fuel combustion by land-vehicle fleets (GJ)	%	1.1%	6.4%	22.35%	0.2%	0.2%	Target met, largely due to the COVID-19 pandemic and the resulting reduction in on-site activities	0.2% reduction per year between 2018 and 2022 Sustainability Program 4.0 and Energy Transition Project
Reduction of utility water consumption in administrative activities	%	-0.4%	13%	20%	0.3%	0.3%	Target met, largely due to the COVID-19 pandemic and the resulting reduction in on-site activities	1.5% reduction by 2021 Sustainability Program 4.0; Climate Change Offsets and Environmental Protection Project

INDICATOR	UNIT	HISTORICAL			TARGETS		STATUS IN 2020	TARGETS FOR 2021 – ONGOING INITIATIVES
		2018	2019	2020	2020	2021		
Share of clean energy sources (solar, wind, hydro, nuclear) in our energy mix	%	95.2%	95.7%	97%	95%	>96%	Target met	A minimum share of 97.6% Continued contribution to the expansion of Brazil's clean and/or renewable installed capacity. Adjustments to the G&T portfolio development process (PDNG 2020-2024)
Total GGH Emissions / Net Operating Revenue	tCO_2e/(R$ '000)	0.247	0.210	0.190	0.170	0.191	Target not met due to higher Scope 3 emissions in 2020	Achieve an emissions intensity (scopes 1, 2 and 3) of 0.181 tCO_2e/(R$ thousand) Sustainability Program 4.0 and Energy Transition Project
Scope 1 Emissions	Thousand tCO_2e	5,350	5,227	4,164	5,175	NA	Target met due to a 12% increase in renewable generation and a 21% reduction in fossil fuel consumption	1% reduction per year between 2019 and 2023 Sustainability Program 4.0 and Energy Transition Project
Adjusted Scope 2 GHG Emissions	Thousand tCO_2e	9.49	8.58	3.79	8.49	NA	Target met as a result of a 52% reduction in electricity consumption compared to 2019, reflecting restrictions on on-site activities during the COVID-19 pandemic	1% reduction per year between 2019 and 2023 Sustainability Program 4.0 and Energy Transition Project
Expand the sources included in Scope 3 GHG emissions	Sources	5	5	5	Add 2 new sources to the GHG emissions inventory by 2023	Add 2 new sources to the GHG emissions inventory by 2023	In 2020 we maintained the same sources of GHG emissions within Scope 3	Sustainability Program 4.0 and Energy Transition Project
Total CH_4 Emissions	%	0.29	0.25	0.20	-	-	-	Methane emissions at Eletrobras Group companies are largely derived from wastewater and not from generation facilities. Because methane emissions from our operations are minimal (accounting for only 0.2% of total emissions), they are not deemed material and no targets have been set to reduce them.
Total NOx Emissions	(t/year)	4,645	8,679	7,411	24,821	24,821	Target met due to decreased generation output from our thermal power plants.	Sustainability Program 4.0 and Energy Transition Project

INDICATOR	UNIT	HISTORICAL			TARGETS		STATUS IN 2020	TARGETS FOR 2021 – ONGOING INITIATIVES
		2018	2019	2020	2020	2021		
Total SOx Emissions	(t/year)	11,344	10,817	9,788	27,127	27,127	Target met due to decreased generation output from our thermal power plants.	Sustainability Program 4.0 and Energy Transition Project
Total PM Emissions	(t/year)	908	425	342	4,229	4,229	Target met due to decreased generation output from our thermal power plants.	Sustainability Program 4.0 and Energy Transition Project
Fugitive SF_6 emissions	(tCO_2e)	32,576	34,941	45,320	157,371	157,371	Target met	Sustainability Program 4.0 and Energy Transition Project
Energy Savings through PROCEL Initiatives	Billion kWh/ year	ND	21.6	22.0	27.7	23.8	Target not met. However, Procel projects helped to avoid 1,360,000 tCO_2e in emissions in 2020, generating total savings of R$ 4.128.000.000	Eletrobras has invested in initiatives within the PROCEL program to reduce waste and improve energy efficiency. By improving the energy efficiency of products and services, the program helps to postpone the need for capacity expansion and the resulting environmental impacts. This indicator therefore is a measure of our support for SDG 7, Target 7.3, and is the primary indicator used to measure the performance of Brazil's National Energy Conservation Program (PROCEL)
Holding company GHG emissions	tCO_2	ND	1004	414.48	NA	Zero	New indicator, created under PDNG 2021-2025	Sustainability Program 4.0; Climate Change Mitigation and Environmental Protection Project; Energy Transition Project

Eletrobras provides compensation incentives for climate change management, including incentives linked to performance targets. The Board annually sets targets for executive officers, managers and employees as part of our Variable Compensation Program. These absolute and relative indicators measure the extent to which executives are engaged around our strategy and policies across the financial, operational, environmental (climate change), social and governance dimensions. For further details, view our CDP Climate Change Questionnaire 2020.

Business & Management Master Plan (PDNG) Indicators

Total GHG Emissions/ Net Revenue and reduction in Scope 1 and 2 emissions: Our target is to reduce Scope 1 and 2 emissions by 1% per year from 2021 to 2025. Year 2020 has been disregarded due to the effects from the pandemic on emissions

Offset 100% of holding company GHG emissions (Scopes 1, 2 and 3) from 2021. This target does not include our subsidiaries

R&D+I investments of 1.2% of Revenue (20% higher than the regulatory minimum)

Increase biomass carbon stocks by 5% per year

STEPS TO OUR FUTURE

Expand research into green hydrogen generation technology.

Develop a Decarbonization Policy for Eletrobras Group companies.

Set targets and time frames for achieving climate neutrality and subsequently net zero emissions (under our Net Zero Plan).

Register new plants to issue I-RECs.

Offset/reduce holding company emissions.

Set Science-Based Targets.

Annex: Scenario analysis

Eletrobras invest continuously in technological innovation, research and development to assess and mitigate future impacts from climate change, in accordance with our Environmental Policy. Some of our ongoing research projects are related to our carbon footprint, the vulnerability of our businesses and operations, scenario assessments and adaptation studies.

Among our flagship projects is *MudClima* (Assessment on the Effects of Climate Change on Hydrometeorological Prediction), developed by CEPEL. The goal of this project is to assess information on climate variables and meteorological and hydrological risks that can affect our operations. This project will allow us to:

1- Supplement CEPEL's cumulative knowledge and apply it immediately to computer models for forecasting scenarios and inflows into our hydroelectric reservoirs;

2- Assess the effects of climate change as predicted in IPCC scenarios on generation security and greenhouse gas emissions;

3- Assess our hydropower assets' adaptation and resilience using a set of proposed metrics;

4- Implement social and environmental adaptation strategies and actions for our business.

MudClima is currently conducting an assessment of hydrologic scenarios based on climate analyses and precipitation and discharge trends at 152 Brazilian hydropower plants. This assessment used precipitation data from the Brazilian Water Agency (ANA) and flow information from the National Grid Operator (ONS).

The assessment shows that total annual precipitation declined at several hydropower plants in Brazil's Southeast from 1975 to 2016. River discharge rates also declined in this region from 1931 to 2018, as well as at other dams in the Tocantins and São Francisco river basins. Conversely, total precipitation and discharge rates increased over the same period at dams in the South.

Obtaining historical discharge data is an important step in establishing future climate change scenarios. Click here to read more about the study.

Another important ongoing project is our Reservoir Carbon Balance (Projeto Balcar), led by the Brazilian Power Sector Research Center (Eletrobras Cepel) in collaboration with Eletrobras Eletronorte, Chesf and Furnas. This study has received international recognition for assessing emissions generated by artificial hydropower reservoirs.

TCFD Content Index

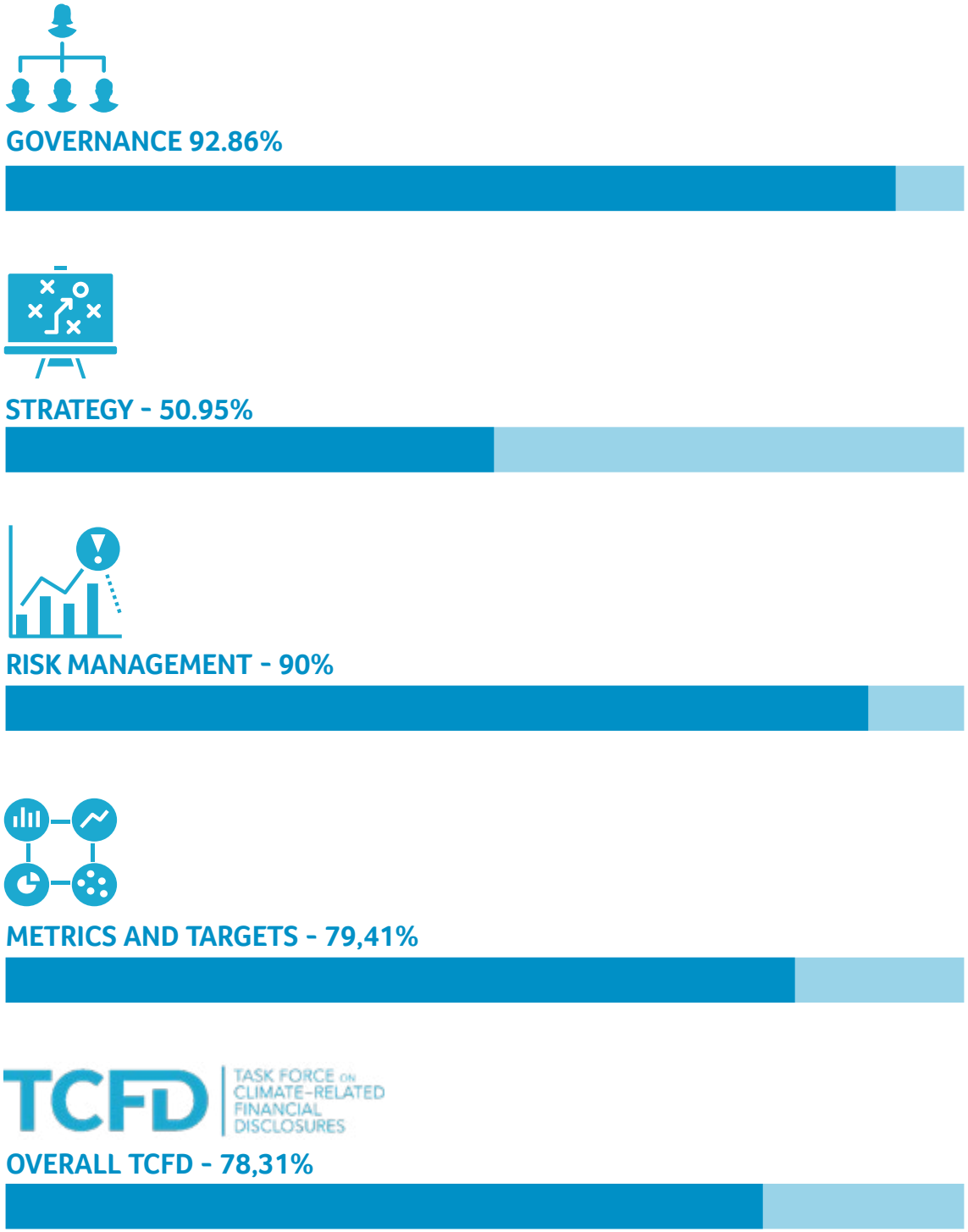
RECOMMENDATIONS	RECOMMENDED DISCLOSURES	PAGE	GRI CORRELATIONS	CDP CORRELATIONS
Governance	a) Describe the Board's oversight of climate-related risks and opportunities	7	102-18; 102-19; 102-20; 102-26; 102-27; 102-29; 102-31; 102-32	C1.1b
	b) Describe management's role in assessing and managing climate-related risks and opportunities	7	102-29; 102-31; 102-32	C1.2; C1.2a
Strategy	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	12	102-15	C2.1a; C2.3; C2.3a; C2.4; C2.4a
	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	17	201-2	C2.2; C2.3a; C2.4a; C3.1; C3.2a; C3.3; C3.4; C3.4a
	c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	17		C3.2; C3.2a

RECOMMENDATIONS	RECOMMENDED DISCLOSURES	PAGE	GRI CORRELATIONS	CDP CORRELATIONS
Risk Management	a) Describe the organization's processes for identifying and assessing climate-related risks	18	201-2	C2.1; C2.2; C2.2a
	a) Describe the organization's processes for managing climate-related risks	21		C2.2; W1.2d
	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	22		C2.1; C2.2
Metrics and Targets	a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	24	102-30	C1.3; C4.2; C4.2a; C4.2b; C9.1; C11.3; C11.3a; W3.3b; W8.1a
	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks	27	102-29; 102-30	C6.1; C6.3; C6.5
	c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	30		C4.1; C4.1a; C4.1b; C4.2; C4.2a; C4.2b; W8.1b

TCFD reporting status

The four TCFD recommendations are broken down in 11 Recommended Disclosures, as shown in the figure below. Each recommended disclosure is supported by guidance on reporting information.

Our percent coverage of the TCFD Recommendations has been calculated based on the extent to which information is responsive to the disclosure guidance, regardless of the qualitative approach to disclosures.



Credits

Eletrobras – Centrais Elétricas Brasileiras S.A. provides several channels for communication with stakeholders
For communications related to this report, please write to:
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Eletrobras

MINISTÉRIO DE
MINAS E ENERGIA

PÁTRIA AMADA
BRASIL
GOVERNO FEDERAL