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Message from the CEO

The major challenge we had in 2020 was to face the Covid-19 pandemic. To meet the social isolation guidelines, we immediately put our employees on home-working. We adopted a rigid protocol while preparing a cautious and rational return to face-to-face work.

Now that the year has ended and our results have been compiled, it is clear that we have managed to overcome the obstacles, including the investments made in systems, such as SAP, the creation of the Information Technology and Artificial Intelligence Center, as well as the modernization of our entire computer system.

Despite of the difficulties already mentioned, we have evolved with the project for the installation of the Smart Grid Laboratory, which includes a partnership with Petrobras, one of our associates, and should be inaugurated in 2021.

Today, about 80% of our funds still come from our founding associates, but we should also point out that we also provide services to several government and regulatory entities and other companies in the Brazilian electricity sector. We want to intensify these activities.

In this sense, we are preparing our first Strategic Planning, which will guide us in a ten-year horizon. And we launched an initiative called “Múltiplo Cepel”, which will make it possible to quantify the value of the contributions of Cepel’s developments to its associates, to the Brazilian electrical system, and to society in general.

We need to make our cultural transformation happen, always in a transparent and ethical way, in attention to our Code of Ethics and Conduct and our Compliance Program, implemented since 2019, always with the support of our Advisory Board.

Finally, we cannot miss the opportunity to emphasize that this is our first annual report produced in accordance with the guidelines of the Global Reporting Initiative, the organization that developed the world’s most renowned methodology for collecting and disclosing sustainability performance indicators.

Access the full report to read the full message.
Covid-19 Pandemic

Eletrobras Companies defined the measures to be adopted for the protection of employees and the maintenance of operations, considering international standards and supported by a specialist from the Oswaldo Cruz Foundation. At Cepel, we immediately adhered to the determinations of our founding associate.

On March 18, 2020, all employees and other collaborators were put into remote work. We put together our Plan for Return to Face-to-Face Activities, which, although not subject to Joint Ordinance #20/20201.

From March to December 2020, the informative and educational campaign “Together against the Coronavirus” was conducted, focused on supporting employees in facing the pandemic. Also noteworthy are the podcasts, livestreams and lectures held in conjunction with Eletrobras and the Group companies, with specialists from various areas, as well as the work of the psychosocial support networks.

Throughout 2020, we issued a weekly epidemiological news-letter, informing about the work during the pandemic, the monitoring of the occurrence of Covid-19 cases in permanent staff, fellows, and interns, and the testing of permanent staff and contractors. The health of these audiences has been, and continues to be, monitored via app and the medical field.

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Mission, Vision and Values

Mission
To act and contribute at all levels of Brazil’s electricity sector, maximizing the return to Brazilian society from the results of the research and technological services performed by the Center.

Vision
To be a leader in research, development, and innovation in Latin America and to be among the five largest research centers in electric energy in the world, constituting a reference for the scientific community.

Values
• Ethics, technical exemption and transparency
• Commitment
• Focus on technological innovation
• Dissemination of knowledge
• Social and Environmental Responsibility
• Encouraging multidisciplinary and collaborative work

The Electrical Energy Research Center (Cepel)

We are the technological pillar of the planning and execution of the Brazilian energy policy, as well as of the support to the integrity of the operation and planning of electric energy generation and transmission of the Brazilian National Interconnected System.

Our R&D+I activities are consolidated into six major areas of activity: Energy Optimization and Environment; Electrical Grids; System Automation; Transmission Lines and Electrical Equipment; Materials, Energy Efficiency and Complementary Generation; and Laboratory and Experimental Research Infrastructure.

Cepel develops and maintains its own state-of-the-art set of methodologies and computational model chain, essential for the management of the interconnected electro-energetic system within strict safety criteria.

In terms of laboratory infrastructure, Cepel is the largest in electric energy in Latin America, with 34 laboratories equipped for experimental research and standardized and special tests, some of which are unique in the country. The Fundão Unit, located in Cidade Universitária, on Ilha do Fundão (RJ), houses 24 of these laboratories, the others are at the Adrianópolis Unit, in Nova Iguaçu (RJ).

For more than 40 years, our laboratory infrastructure has played a strategic role in supporting the development of the national industry and the reliability of the Brazilian electricity sector. Our laboratory tests are prepared and executed with promptness, impartiality, and high technical accuracy. The qualification of our technical staff allows us to contribute to the improvement of the technical performance of the equipment under test.
Our main products and solutions

ANAFIN

Aimed to determining and monitoring the economic viability of power generation and transmission. In 2020, the system was consolidated as the official tool employed by the Eletrobras group in its Prioritization and Selection processes for Generation Projects for the composition of its portfolio of new assets.

AnaHVDC

Solution under-development to evaluate the dynamic behavior of large power systems with multiple DC links in a multi-infeed situation (where multiple DC links deliver power at close electrical points in a power system), with a focus on verifying the occurrence of switching failures.

ANAREDE

Most widely used software in Brazil for steady state network analysis. ANAREDE also provides the initial solution for other programs, such as ANATEM, ANA-FAS, and PacDyn, among others.
ANATEM
Main software used by the Brazilian electrical sector to evaluate the electromechanical stability of the Brazilian National Interconnected System (SIN). In its latest version, ANATEM makes use of parallel processing to increase the computational efficiency of simulation methods in the time domain.

Atlas of the Brazilian Wind Potential (novoatlas.cepel.br)
Platform that makes available, in an unprecedented way, an entire consolidated and georeferenced database in a web environment for free consultation.

CAMPEM
A system aimed to simulate and measure the effect of electromagnetic fields on the surroundings of electrical power installations, with the goal of optimizing the performance of these installations and reducing their impact on the environment.

BDMotor
Focused on the diagnosis and calculation of energy efficiency investments in three-phase induction motors. Recently updated, since its creation in the 2000s, it is indicated by the Brazilian Electricity Regulatory Agency (Aneel) for use in energy efficiency projects in industry, providing savings for the sector.

DECOMP
DECOMP is an optimization model dedicated to the short term operation planning of electrical system, officially used in the Brazilian electricity sector by both the National System Operator and the Electric Energy Trading Chamber. Its use helps the institutions in the definition of the Monthly Operation Planning and in the definition of the Settlement Price of Differences (PLD) that will manage the entire dispatch and short-term commercialization of energy in the country.

DESSEM
The Dessem model is used for the daily operation scheduling since January 2020 by the National System Operator (ONS). In January 2021 the Electricity Trading Chamber (CCEE) started to use the model to determine the Price for Settlement of Differences (PLD) with a higher degree of accuracy. With the adoption of Dessem, the PLD started being computed on an hourly basis, yielding more adherence between price and operation, as well as more security from the electrical and energy point of view.
DianE
Focused on transmission and generation equipment management, it presents a modular and evolving architecture, consolidation of historical data from periodic tests and online monitoring data, integrating distinct analysis and diagnosis techniques in a single environment. In addition, it can interact with other systems, such as SAP and SAGE.

Elektra
Computational system for the calculation, sizing, costing, and techno-economic optimization of grounding system designs, direct current and alternating current transmission lines with generic conductor bundles.

IGS
A management tool of sustainability indicators, used to prepare the Annual Sustainability Reports in the GRI Standard format and the greenhouse gas emission inventory of Eletrobras Companies. In 2020, a validation of the Analytical IGS methodology took place, using operations research techniques to analyze historical data and suggest performance improvement targets.

FidCorr
Computational tool to automate the diagnosis of corrosion in transmission line tower foundations, without the need for excavation or de-energizing the line.

IMA-DP
A system that serves all types of high-voltage electrical equipment, allowing the monitoring of insulation in its aging and degradation process, detecting incipient defects, preventing failures, and thus increasing the reliability of this equipment. IMA-DP has already received two international awards for its innovative character for the electricity sector.
Newave
A system used to calculate the operating policy of interconnected hydrothermal. In 2020, a model called Par(p)-A was developed, with the objective of better representing long duration drought periods, such as those recently observed in the Northeast region.

PLD-Pro
PLD-Pro is a system for conducting studies to assess the Electricity Price in the spot market (PLD). It has a web interface and allows remote execution of the models.

SAGE
The SCADA/EMS (Supervisory Control and Data Acquisition/Energy Management System) platform is the most widely used in Brazil, with more than 1.4 thousand installations throughout the country, including the entire national grid through ONS’ control centers (REGER system). The platform includes, besides the typical energy management functionalities, a system for simulations and operator training that exactly replicates the operating environment for training purposes.

SCAn
Frequency response measurement system with unique features on the market, such as noise mitigation, compensation of measurement setup effects, and modular hardware.

SINAPE
A system for automatic disturbance analysis that enables the detailed online study of occurrences in the electrical system from oscillographs. In its online version, called SINAPE.net, it presents as its main feature the treatment, with a high degree of automation, of digital oscillographs, allowing the analysis of disturbances focused on the problem.
SMARTe

Transient overvoltage monitoring system under development. With no equivalent on the market, it will be able to measure, record, and perform grid disturbances analysis, without interrupting the operation. It will thus make it possible to obtain information about the transient stresses that the equipment undergoes during its operation.

SOMA

Asset monitoring web platform that applies Industry 4.0 technologies, such as the Internet of Things, Artificial Intelligence, and Digital Twins to the electrical sector, aiming to translate monitoring data into useful information for decision making by maintenance managers.

UVCorona

Guide for conducting inspections of transmission lines and high-voltage equipment using the UV camera also presenting unified maintenance criterias.

Economic impacts

Our products and solutions generate several positive impacts, among them the economic ones. As examples from 2020, we highlight:

- **DianE**: R$ 40 million in avoided costs for Eletronorte with the detection of four failures in power transformers by the new Bushing Monitoring functionality.

- **FidCorr**: identified correctly the corrosion state of 90% of the inspected transmission line towers foundations in the field tests carried out on Furnas and CGT Eletrosul transmission lines. With FidCorr, the analysis time takes about 40 minutes per each foot tower.

- **IMA-DP**: technical support in the replacement of 12 new current transformers from Amazonas GT for which we verified problems. With this, the company recovered more than R$3 million. IMA-DP also helped Eletronorte to intervene in the generating unit 05 of the Tucurui Hydroelectric Power Plant. The intervention avoided the failure and the associated costs, estimated at around R$ 10 million. IE Madeira (Interligação Elétrica do Madeira SA) has removed three surge arresters from operation as of our evaluation at the Araraquara 2 and Coletora de Porto Velho substations, saving R$2 million.

- **ANAREDE**: the transmission margin automatic calculation module allows the systematic evaluation of the feasible solution space for the dispatch of candidate generation, ensuring the maximum usage of the remaining transmission capacity of the Brazilian National Interconnected System and producing a positive indirect economic impact in that it allows the postponement of investments in the construction of new transmission lines.
Innovation for the electricity sector

Cepel, as the main agent of innovation in the Brazilian electricity sector, develops the main computational tools for operation planning studies and for the expansion of the Brazilian National Interconnected System (SIN), as well as operation supervision and control.

For more than 40 years, our laboratory infrastructure has played a strategic role in supporting the development of the national industry and the reliability of the Brazilian electricity sector. Our laboratory tests are prepared and executed with promptness, impartiality, and high technical accuracy, following the procedures of national and international standards, and our own or our customers’ technical specifications. Moreover, they are not limited to the simple approval or disapproval of a certain equipment. The qualification of our technical staff allows to contribute to the improvement of the technical performance of the equipment under test.

Our main set of R&D+I projects is the Portfolio of Institutional Projects (IP Portfolio) for Eletrobras Companies. It is noteworthy that the annual planning of activities and investments are derived from strategic guidance by Cepel and the Eletrobras Companies as a function of prioritizing which products and/or results must be delivered in the following year. Based on the current discussions within the CPT’s (Commission on Technology Policy) Technical Groups and on the synthesis of the IP Portfolio, the CPT expresses its opinion and recommends its submission to our General Assembly for approval.
Besides the IP Portfolio, we have developed R&D+I projects on demand for other companies, Special Associates and other companies. In 2020, R$ 193.3 million were spent for the development of R&D projects, technological services, licensing of programs, testing and management. The table presents the values listed by area in which Cepel operates.

The expenses related the META Project - Technical Assistance Project for the Energy and Mineral Sectors, represented, for the year 2020, R$2.7 million, which were not considered in the entries above. The META Project, the object of World Bank Loan Agreement No. 8,095/BR, was an initiative of the Ministry of Mines and Energy (MME), whose main goal was to contribute to broadening and consolidating the advances in the Brazilian energy and mineral sectors, supporting the country’s competitiveness and sustainable economic growth.

<table>
<thead>
<tr>
<th>Areas of operation</th>
<th>R$ million</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Automation</td>
<td>27.5</td>
</tr>
<tr>
<td>Energy Optimization and Environment</td>
<td>32.8</td>
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<tr>
<td>Lines and Stations</td>
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<tr>
<td>Electrical Grids</td>
<td>20.5</td>
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<tr>
<td>Materials, Energy Efficiency and Generation</td>
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<tr>
<td>Experimental Research</td>
<td>64.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>193.3</strong></td>
</tr>
</tbody>
</table>

Two projects classified in the first Innovation Olympics of Eletrobras Companies

Two of our projects were selected in the first Innovation Olympics of Eletrobras Companies: the project “Methodology of Acceleration and Monetization of Technological Products Developed within Eletrobras Companies”, that was awarded the first place, and the project “Business Analytics System to support management and decision making”, that was awarded the fourth place. The Olympics result was announced on October 20th, when the projects were reevaluated by a new panel of judges.
Highlights of 2020

Idealization and Creation of the Technical Project Management Office

In 2020, our Technical Project Management Office was created and started to operate. Its main objectives involve disseminating a management culture through the adoption of methodologies, best practices, and tools; assisting in the standardization and guidance of practices and procedures to create and manage projects; and monitoring and evaluating each one of them by means of indicators and reports, in order to ensure their good evolution and strategic alignment with our interests and those of Eletrobras, enhancing the positive impacts.

Enabling the calculation of the energy price on an hourly basis

Methodological improvements incorporated into the DESSEM program have allowed Brazil, following the example of other countries, to calculate the price of energy on an hourly basis as of January 1, 2021. The change was only possible with the official implementation, by the Electric Energy Trading Chamber (CCEE), of the DESSEM computational model, developed by Cepel.

System development with Industry 4.0 technologies

The Integrated System for Monitoring and Diagnosis/Computational Diagnosis of the Operational Condition of Electrical Generation Equipment (Soma) is a disruptive project, as it applies Industry 4.0 technologies to the management and monitoring of assets in the electrical sector. Since the beginning of the pilot use of Soma at the Itaipu Hydroelectric Power Plant, the company has been able to optimize the processes in monitoring its machines, saving man-hours, and obtaining more reliable data. The solution is in the final stages of commissioning for use in transmission assets as well.
Energy company modernization with SAGE

In February 2020 we signed a contract with Cemig GT for the complete modernization of the System Operation Center (COS) and the backup center of the company, one of the most important transmission and generation utility in Brazil. The partnership aimed at implementing the SAGE platform to support, in real time, the operation of the entire transmission network and generation plants. The solution was chosen by Cemig GT, among other reasons, because of its maturity.

SAGE Platform completes 15 years of operation at ISA CTEEP

The SAGE platform, completed 15 years of uninterrupted operation in 2020 in the Transmission Operation Center and in the Backup Operation Center of ISA CTEEP, one of the main private transmission utilities in Brazil, responsible for the transmission of about 60% of the energy consumed in the Southeast region and 94% of the energy of the state of São Paulo.

Partnership with State Grid Brazil Holding (SGBH)

Throughout 2020, we worked together with SGBH on a research and development project to meet the regulatory measures of the National Electric Energy Agency (Aneel) through the customization of a predictive monitoring system for Current Transformers (CTs).

We also have a major partnership with SGBH in the development of energised-line maintenance technology in Ultra-High Voltage Direct Current (UHVDC) since 2018. In 2020, a theoretical analysis with mathematical modeling was developed on the performance of DC system insulator chains with broken units, to subsidize the experimental analysis previously performed.

New version of BDMotor

Launched in April 2020, the new version was developed in partnership with the Petrobras Research Center (Cenpes) as a support tool for energy efficiency projects involving three-phase induction motor installations.

The system update is available as free software on a web platform on the website of the National Electrical Energy Conservation Program (Procel). Its proposal is to expand the database of engines, as well as to revise all the load analysis methodologies and add more accurate economic analysis.
Cooperation for the development of a new computational environment for the Brazilian electrical system

At the end of April, our top management team joined the top leaders of the Brazilian National Electric System Operator (ONS) and of the Electric Energy Trading Chamber (CCEE) to sign an agreement for the provision by Cepel of a new computational environment for the models officially used in the studies for planning the expansion and operation of the Brazilian electrical energy system, contemplating a unification of the databases and input and output files for the models.

The cooperation is part of the Libs Project, created in 2017, which aims to develop a more flexible architecture to integrate these energy models into a single system. Libs is expected to be launched by the end of 2022.

Acoustic emission analysis in power transformers

In April, we performed acoustic emission analysis on the three single-phase power transformers of the Eletronuclear Angra 2 Nuclear Power Plant. The analysis allowed Eletronuclear to have a better knowledge about the dielectric conditions of three of its most important assets, and the periodic evaluation in Angra I and Angra II will allow the follow-up of the operational status of this equipment, allowing the detection of incipient defects and the consequent increase of reliability in the energy supply by both nuclear plants.

New version of IGS 2.0

In May, we deployed a new version of IGS 2.0, totally customizable, with greater flexibility in data storage, in the frequency of variable and indicator collection, in homologation processes, and in the types of variables to be registered in the system. As the system is all encrypted, the security of the information is also guaranteed.

NZEB Cepel House - Winning project of public call

The New NZEB (Nearly Zero Energy Building) Cepel House project was classified as the first candidate in the public call Procel Edifica - NZEB Brazil. The House was projected, in partnership with the School of Architecture and Urbanism of the Federal University of Rio de Janeiro, to be a multi-use space, constituting an attractive environment for research, visits, meetings, technical meetings, training, and professional formation. It will also promote the national integration among the scientific community, society, governmental and private agents, with the forecast of construction during 2022 at Cepel’s Fundão Unit.
Online monitoring system completes one year at Balbina HPP

In June, the pioneering system of continuous online monitoring of partial discharges, implemented by us in the generating units of the Balbina Hydroelectric Power Plant (HPP), belonging to Amazonas GT, completed one year of uninterrupted monitoring of the equipment’s condition. Result of the integration of IMA-DP and Soma (see page 10), the system has enabled the company to optimize maintenance time and costs by reducing the risks of insulation failure in generators.

New tool for integration of the models used by SIN

In July 2020, we launched the first version of the pyencad tool, a programmable interface for treatment, data analysis and integrated execution of some of the energy optimization models developed by us and used in the planning of the operation of the Brazilian National Interconnected System. It is planned that the pyencad tool will be coupled, in the near future, with the new Libs computing environment (see page 15).

Cooperation with ONS for using AnaHVDC and ANAFAS

In July 2020, we signed a technical cooperation contract with the Brazilian Electric System National Operator (ONS) to, among other topics, develop computational modeling and perform dynamic simulations on the Brazilian electric system, according to ONS’ own criteria and assumptions, in operation planning studies (off-line application). ONS does not currently have an off-line tool that includes both the accurate representation of the switching fault and the electromechanical dynamics of SIN.

As for the Anafas program, used for studies regarding short-circuit calculation, in 2020, modifications were made comprising the generation of data from the Basic Grid, compatibility of data from bar shunt banks and static compensators with power flow cases and circuit data criticism, in order to continue the integration with SIGER, an electrical grid data management system developed with the objective of unifying, under a single base, data from power flow and short-circuit studies.

Collaboration with the Italian company TERNA

We carried out a collaborative work with TERNA, the Italian National Electric System Operator, to validate the methodology for calculating predictive indices of performance in electric systems with high level of direct current feeds (DC Multi-Infeed) in the European transmission system. This methodology is implemented in the Anatem program, which is the most widely used program for analyzing electromechanical transients in large systems in the Brazilian Electrical System.
The novel coronavirus pandemic, and the resulting social isolation, have imposed the challenge of conducting training, meetings, and virtual events. We were able to adapt to the new reality and fulfill our commitment to the electricity sector and society, presenting them with the results of our research and services. We held 48 events aimed at the external public, mostly online, totaling more than 3.6 thousand participants and 768 certificates issued.

Results in the wind energy area

In the wind generation area, a significant result was the conclusion of the development of the methodology for calculating the uncertainty for obtaining the P90 parameter, necessary for calculating the physical guarantee of wind farms. Additionally, the development and implementation of a monitoring platform for the Artilleros wind farm, belonging to the UTE (Usinas Y Transmissiones Electricas) consortium of Uruguay and Eletrobras, was completed.
Innovation in Sustainability

Petrolina Solar Platform

Chesf, in partnership with universities of Pernambuco and the FITEC foundation, is implementing in Petrolina (PE) a 0.5 MWp solar plant, with several technologies of photovoltaic modules and different arrangements, to carry out studies and research. The project has our technical support and aims to contribute scientifically to the survey of technical coefficients, enabling national qualification both for the operation of infrastructure of the type, and for the manufacture of components and complete generation systems.

Support to the Brazilian Navy in renewable generation and energy efficiency projects in oceanic islands

The Brazilian Navy has requested a technical cooperation agreement with the objective of developing solutions for the supply of electric energy to the country’s oceanic islands based on renewable sources. The starting point is the archipelago of São Pedro e São Paulo, where, more than a decade ago, we conceived and installed the only local source of electric energy, formed exclusively by photovoltaic panels and batteries. The agreement is expected to be signed in early 2021.

New studies related to the electrification of isolated houses

Based on the studies and tests that we carried out, simulating real operational conditions, that the MME and Eletrobras established as a criterion of the Luz para Todos Program (“Light for all”) that each consumer unit of individual residential use should have a guaranteed monthly availability of 45 kWh/month. The system that meets this criterion is called SIGFI 45.

We have already evaluated, through simulations, that SIGFI 60 systems (60 kWh/month generation) with enough batteries for one day of autonomy (as opposed to SIGFI 45 systems with batteries for two days of autonomy) have a lower cost and higher availability for the customer. We are currently conducting long-term trials to experimentally prove whether the SIGFI 60 system with a smaller battery bank is actually superior to the conventional SIGFI 45 system, as demonstrated by simulations.
Sustainable Development and Expansion Planning + Water Resources

In 2020, we developed a series of solutions for planning the expansion of the Brazilian electricity system:

• implementation of an interactive process between the Melp, Newave and Dessem models with a new methodology for the long term generation expansion planning;

• completion of the first report on the Development of Socio-environmental Impact Metrics in Energy Systems in the project Strategic Environmental Assessment for Generation Expansion Planning (AAEXP), consolidating the stage of valuation of greenhouse gas emissions and freshwater consumption, and the insertion of related costs in the Matrix model (Models for Generation Expansion);

• implementation, in the Confi model (Confiability in Interconnected Hydrothermal Systems), of metrics associated with the new general criterion of guarantee of supply to measure the SIN’s peak supply, with representation of the interconnections;

• evaluation study for considering synthetic critical periods in the Sinv (Hydroelectric Power Plant Inventory System) model, used in the calculation of firm energy in Inventory Studies for hydroelectric power plants and small hydroelectric power plants; and

• first stage of the evaluation of the current methodology for revising the waiting volume of the reservoir at the Boa Esperança hydroelectric plant, owned by Chesf, with the purpose of anticipating the refill of the waiting volume in years with a drier rainy season (Cheias project).

Green Hydrogen

Green hydrogen is produced from the electrolysis of water using electricity from renewable sources. In this context, Eletrobras demanded that Cepel, in 2020, developed a conceptual project for a production plant for this source. The goal was to master the project cycle of this type of infrastructure. The project is scheduled to end in February 2022.
Digital transformation of the electricity sector

Cepel’s main impacts on digital transformation are taking place in the electrical energy sector. On pages 6 to 10, we report what are our main products today and, in the digital automation line, we highlight the SAGE system.

SAGE monitors thousands of measurements and, through logical and algorithmic analysis, can trigger alarms and generate graphical information that provides the Operator with information to avoid, mitigate, or remediate situations that could lead the electrical system to critical conditions. To give an idea of its relevance, several of the largest companies in the electric sector use the SAGE platform in their control centers, operating uninterruptedly for decades.

With the various solutions we develop, we not only influence the way companies in the electric sector operate, but also reduce the effort of their expansion and operation planning study teams and improve their management processes. We also make the government planning and regulation teams’ activities more efficient.

We seek to understand our performance in this transformative process through the degree of market penetration of SAGE and SINAPE (see page 9) and the feedback given by the users themselves, in specific forums, such as working groups, and in broader forums, such as seminars and congresses.

We also highlight the SOMA system, whose details can be checked on page 10.

Internal Digital Transformation

We created an Information Technology and Artificial Intelligence Center (NTEC) to study and develop the application of tools such as artificial intelligence, learning machine and deep learning, blockchain, geographic information system, and high performance computers.

The switch to the Microsoft Office365 platform has been contributing to productivity, integration, mobility, and security for all employees and customers in administrative processes. We modernized hardware and software for firewalls and access points. We also hired support links to Adrianópolis and rationalized the printing resources.
Laboratory Infrastructure

Next, we present our main labs.

**Smart Grid Laboratory**

The implementation of the laboratory is being carried out with our own and from one of our special associates resources, Petrobras. Between 2020 and 2021, a total of R$8 million is planned to be invested. Smart electrical grids make extensive use of digital technologies and advanced computing and communications capabilities for monitoring and managing electricity throughout the transmission and distribution structure to end consumers.

Our Smart Grid Lab will meet, in its the first phase of implementation, the needs for specialized labs to cover power levels between 0.5 kW and 300 kW. The laboratory project has modularity characteristics and foresees the possibility of expanding its installed capacity up to 2 MVA.

The component test area, focused on conformity assessment of inverters according to national and international technical standards, started operating in December 2020. The main differential of the space is its power capacity, currently 300 kVA, which represents a substantial increase in laboratory capacity in the area for the Brazilian electrical sector. The first service contracted was for a Uruguayan client, who could not find the same power capacity in his country.

**Other laboratories**

- Fuel Cell Laboratory
- Advanced Supervision and Control Laboratory
- Synchronphasor Measurement Laboratory
- Intensive Computing Lab
- Lighting Laboratory
- Laboratory for the Development of Diagnostic Systems for Transmission Equipment
- Diagnostic Systems Laboratory for Generating Equipment
- Geographic Information Systems, Water Resources and Environment Laboratory
- Electrical Machines and Transformers Efficiency Test Laboratory
- Electrical Energy Measurement Laboratory
- Electrical Equipment and Installations Diagnostic Laboratory
- Mechanics and Dynamics of Structures Laboratory
- Refrigeration Laboratory
- Photovoltaic Systems Laboratory
- Laboratory for Performance Evaluation of Washing Machines
- Chemical Analysis Laboratory
- Corrosion Laboratory
- Metallography Laboratory
- Transmission Microscopy Laboratory
- Electrical and Magnetic Properties Laboratory
- High Current Laboratory
- High Power Laboratory
- High Voltage Laboratory
- Calibration Laboratory
- Corona Testing Laboratory
- Pollution Test Laboratory
- Current Impulse Laboratory
- High Voltage Measurement Reference Laboratory
- Partial Discharge Research Laboratory
- Laboratory for Performance Evaluation of Washing Machines
- Chemical Analysis Laboratory
- Ultra-High Voltage Laboratory
Corporate Governance

Cepel is a private law legal entity, constituted as a non-profit association, with administrative and financial autonomy, ruled by its bylaws and applicable legislation. Cepel is to be managed by the following corporate governance structure:

**General Assembly**: highest corporate governance body, is composed of the founding associates. Among other attributions, it elects and dismisses members of the Executive Board; promotes changes in the Bylaws; approves Cepel’s accounts; deliberates on the admission or exclusion of associates; approves the Center’s Internal Rules; and approves the annual contributions related to the rights and obligations of the associates.

**Advisory Board**: is made up of founding and special associates. The Advisory Board is a collegiate body for deliberation, consultation, and collective manifestation of the associates, whose mission is to watch over, in light of the interests expressed in the Bylaws, the promotion of our objective and social purposes, as well as the protection and valuation of our assets, setting business guidelines, ensuring their sustainable development, and watching over the interests of the associates and other interested parties.

**Supervisory Board**: composed of a member indicated by Eletrobras, plus one indicated by the other founding associates, and another chosen by the special associates. The Supervisory Board is a statutory support body, whose main attribution is to supervise the management’s acts, mainly in what concerns the financial and accounting management, through the follow-up of our activities.

**Executive Board**: consisting of a CEO and up to three officers, is our executive management body, responsible for administration, and in charge of proposing initiatives, business plans and policies to the Board, as well as implementing the strategy defined by the Advisory Board and conducting our daily operations.

**Internal Audit area**: advise the High Management and assess the effectiveness of the Center’s operations, proposing the adoption of measures to improve the way the activities are carried out, as well as attending to external inspection agencies.
We run the Compliance Program, based on the guidelines and directives of our founding associate and main sponsor, Eletrobras. The program comprises mechanisms to detect and correct misconduct and illicit acts, in addition to the adoption of preventive measures, capable of avoiding that such misconducts happen, following five dimensions: 1) Development of a Compliance-focused business management environment; 2) Periodic risk assessment; 3) Structuring and implementing policies and procedures; 4) Internal promotion of communication and training activities; and 5) Ongoing monitoring of the program, as well as remediation measures and enforcement of penalties.

In line with these dimensions, several of our official documents now provide corporate integrity criteria so that our activities are free from fraud or corruption. Our main documents in this regard are: Cepel’s Code of Ethical Conduct and Integrity; Cepel’s Anti-corruption Policy; Policy for Handling Conflicts of Interest; Cepel’s Consequences Policy; Cepel’s Bidding and Contract Regulation; Integrity Evaluation Guide, etc.

In October 2020, we created the Integrity and Compliance Activity (ATIC) to manage the Compliance Program and our regulatory documentation. For ethics and anti-corruption management, we allocate financial and technological resources in the use of the Background Check tool, developed by a third-party company for background research. The tool is applied to critical suppliers. We also rely on the Reporting Channel of Eletrobras Companies, based on an external and independent platform, with guaranteed anonymity.

The members of the governance bodies and employees receive, periodically, training on the principles, norms and standards of behavior of the Code of Ethical Conduct and Integrity, the Integrity Program (Compliance) and other norms. Another disclosure tool was the Eletrobras Companies’ Integrity and Ethical Culture online course. Delivered on two occasions in 2020, the training course covered 97% of our employees.
External Initiatives

In 2020, we joined the Na Mão Certa (In the Right Track) Program, an initiative by Childhood Brasil that aims to join efforts to end the sexual exploitation of children and adolescents on Brazilian highways and in several links of the country’s production chains, including companies in the electrical sector.

We also adhered to Eletrobras’ Declaration of Commitment on Climate Change in a board resolution dated March 2013. With the document, we commit to reducing fossil fuel and electricity consumption.

Membership in Associations

<table>
<thead>
<tr>
<th>Association</th>
<th>Level of Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Memory</td>
<td>Board of Directors and General Assembly</td>
</tr>
<tr>
<td>International Center for Renewable Energies (Cibiogas)</td>
<td>Board of Directors and Supervisory Board</td>
</tr>
<tr>
<td>Committee of the Commission for Regional Energy Integration (Bracier)</td>
<td>Executive Office</td>
</tr>
<tr>
<td>Alberto Luiz Coimbra Institute of Graduate Studies and Engineering Research – unit of the Federal University of Rio de Janeiro (Coppe / UFRJ)</td>
<td>Directing Council</td>
</tr>
<tr>
<td>Brazilian Commission for Electric Power Generation and Transmission (Cigré)</td>
<td>Board of Directors, Technical Committees and Working Groups</td>
</tr>
<tr>
<td>Brazilian Association of Technical Standards (ABNT)</td>
<td>Projects and committees</td>
</tr>
<tr>
<td>Getúlio Vargas Foundation</td>
<td>Consulting Board</td>
</tr>
</tbody>
</table>
Risk and Crisis Management

We are gradually implementing risk and crisis management processes, based on general guidelines from our founding associates. In 2021, we will study the creation of a risk committee to enable and unify management.

Although there is no formal risk treatment area, some risks have already been mapped, and mitigation actions are already underway: corporate governance risks; Image and reputation risks, and legislation and standards risks.

Other initiatives are noteworthy: Anti-corruption Policy; Annual Internal Audit Plan; Annual Internal Audit Report (RAINT); Due Diligence Form, filled out by suppliers. Furthermore, some of our employees participate in Eletrobras initiatives that address the theme, such as the Parliamentary Articulation Committee; Compliance Management Committee (CDC); and Information Security Committee.

Cybersecurity

Formal cybersecurity management is still under development in our activities. We have, since 2017, a Committee on Cyber and Information Security, responsible for actions in this regard, and we are structuring a policy on the topic. In 2020, we have already advanced with the adoption of the Personal Data Privacy Policy, the active participation in the Eletrobras Companies’ Information Security meetings and committees, and the adoption of the Eletrobras Companies’ Information Security Incident Handling Regulations - Version 1.0 - which is currently being disclosed.

We have a new Virtual Private Network Management Regulation, still pending approval, and we are updating the Information Security Planning. We currently protect our operations with technological systems and event monitoring. The identified occurrences - avoided incidents, vulnerabilities and assets, and responsible parties - are treated and communicated quarterly to the Audit and Statutory Risk Committee.
The elaboration of our strategic plan is scheduled for 2021. Currently, we base our actions on the guidelines that come from the founding associates. Eletrobras, within its long-term strategic planning and definition of the Business and Management Master Plan, has been diagnosing in which technological knowledge it should invest to improve the results of its business, signaling to us which ones are strategic. We support the company in this regard, as well as our other customers, by forecasting, monitoring, and analyzing trends to develop products in line with the modernization of the market, regulation, and technology in the electricity sector.
Cultural transformation

In November, we started a cultural transformation project, by means of a diagnosis carried out through interviews with managers and employees. The result was presented to the Advisory Board in December and is being broken down into actions.

A team from the Technology and Innovation Management Laboratory (LabGETI), at Unicamp, was hired to develop, together with us, a project to improve and consolidate qualitative indicators of strategic impact and quantitative indicators of economic impact. The economic indicators will be synthesized in the indicator called Múltiplo Cepel, designed for individual R&D+I lines and projects, and in the Múltiplo Global Cepel, conceived for our own portfolio of lines and projects. The idea is that we can identify our competitive advantages, which of our products are unique in the market, and adjust our pricing policy.

Our repositioning also covers cost efficiency. Many actions are being taken in this direction. With all these actions, we aim to access the market in a more efficient and effective way, generating value for our customers and the revenues necessary for our perpetuity.

Strategic Partnerships

In November we signed an agreement with the American company Cutsforth. We will provide application programming interface (API) license for partial discharge monitoring for integration with software developed by the American company. Cutsforth has committed to purchase 20 API licenses and to market the integrated solutions.

In late November, we signed a Memorandum of Understanding (MOU) with SPIC Brazil, a subsidiary of State Power Investment Corporation of China (SPIC), and SPIC’s smart energy research institute in China, SNPDRI. The objective of the partnership, the first involving the Chinese research institute in Latin America, is to develop a program to exchange experiences and technologies in the creation of energy projects, and to strengthen cooperation between Brazil and China.
People management

We ended 2020 with 274 employees, all working in the Brazilian Southeast region. During the year, 22 employees were dismissed as a result of the Consensual Dismissal Plan (PDC) implemented in the second half of the previous year.

Since 2010, we have adopted the Career and Remuneration Plan (PCR) of the Eletrobras Companies. The career model used aims to align people management policies and practices with the corporate strategic direction, as well as to integrate people management processes in the search for improved organizational performance.

Besides the benefits and advantages to which we are bound by law and under the Collective Bargaining Agreement, we spontaneously add others as part of our policy of valuing and retaining our employees. The initiative is based on our human resources policy premises, highlighting health and dental plans, food or meal assistance, daycare assistance, educational assistance, funeral assistance, and life insurance, among others.

We carried out the necessary training throughout 2020, totaling 4.7 thousand hours of training - an average of 17.42 hours per employee. Our employees are also encouraged to pursue master’s and doctoral degrees through student activity releases, always looking for research topics related to our activities and the demands of our associates.
To evaluate our employees’ performance, we use the Performance Management System (PMS), the same one adopted by Eletrobras Companies. Currently, we are looking for a more complete system that is more adequate to our activities and that allows the development of competencies adherent to the new Career and Compensation Plan, which is currently being prepared. This plan will allow, in addition to professional development, the monitoring of goals to achieve organizational results, aligned to the Strategic Planning guidelines.

The performance evaluation for 2019, which was supposed to be held in 2020, did not take place due to the difficulties imposed by the pandemic.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of employees</th>
<th>Training hours</th>
<th>Average training hours per employee</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65</td>
<td>985</td>
<td>15.16</td>
</tr>
<tr>
<td></td>
<td>209</td>
<td>3,788</td>
<td>18.12</td>
</tr>
<tr>
<td></td>
<td>274</td>
<td>4,773</td>
<td>17.42</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Higher Education Level</th>
<th>Number of employees</th>
<th>Training hours</th>
<th>Average training hours per employee</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>44</td>
<td>591</td>
<td>13.43</td>
</tr>
<tr>
<td></td>
<td>139</td>
<td>3,004</td>
<td>21.61</td>
</tr>
<tr>
<td></td>
<td>183</td>
<td>3,595</td>
<td>19.64</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Managerial Level</th>
<th>Number of employees</th>
<th>Training hours</th>
<th>Average training hours per employee</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
<td>120</td>
<td>15.00</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>213</td>
<td>12.53</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>333</td>
<td>13.32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Without Higher Education Level</th>
<th>Number of employees</th>
<th>Training hours</th>
<th>Average training hours per employee</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13</td>
<td>274</td>
<td>21.11</td>
</tr>
<tr>
<td></td>
<td>53</td>
<td>571</td>
<td>10.77</td>
</tr>
<tr>
<td></td>
<td>66</td>
<td>845</td>
<td>12.81</td>
</tr>
</tbody>
</table>

Remark: the average training hours were calculated as follows: training hours / number of employees by gender and occupational category. Employees with the following employment relationships were considered: own employees at the Center, requisitioned, amnestied/reintegrated, and commissioned positions. This staff does not include assigned employees, employees on leave without pay, and amnestied/reintegrated employees assigned to Government Agencies.
Diversity and equal opportunities

We follow the guidelines of the Eletrobras Companies’ People Management Policy and Cepel’s Code of Ethical Conduct and Integrity, which guide to respecting diversity, promoting equity, equal opportunities and inclusion. In line with these premises, since 2007 we have run the Choir Project, an initiative that gives employees the opportunity to experience and recognize the richness of living with diversity.

We have a seat in the Gender, Race and Diversity Committee of the Ministry of Mines and Energy and Related Entities. We also maintain a committee with the same theme.

In 2020, we promoted for our employees a series of webinars on the theme. We also released on our website the series “More than workforce. Female force.”, with professional and personal profiles of several of our employees.

Diversity indicators:

- 32% women at management level
- 24% women on staff
- 16% of the workforce is made up of minority groups (black, Asian, mixed-race and indigenous people)
- 47% of employees over 50
Climate Survey

We evaluate the perception of our employees regarding the various factors that impact their activities, both internal and external, through the Climate Survey, carried out every two years. The results assist senior management in decision making, inspiring continuous improvement in business practices and positively influencing the organizational culture.

<table>
<thead>
<tr>
<th>Participation (% of the surveyed universe)</th>
<th>Favorability Index Companies’ FI (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.36</td>
<td>74.23</td>
</tr>
<tr>
<td>45.29</td>
<td>72</td>
</tr>
<tr>
<td>2018</td>
<td>CEPEL</td>
</tr>
<tr>
<td>2020</td>
<td></td>
</tr>
</tbody>
</table>

Occupational Health and Safety

In compliance with the pertinent legislation, we maintain Internal Commissions for Accident Prevention (CIPAS) in both units, which cover 100% of the staff. The CIPAS collaborate with the safety and occupational health sector, and organize the Annual Accident Prevention Week. In 2020, only one work-related injury was recorded.

We also maintain, in our two units, medical outpatient clinics for the monitoring of the worker’s health, which is done by means of annual check-up exams, in addition to the periodic medical exams. These structures are also available to provide first aid care during working hours.

Our employees are covered by a health plan, which also provides access to virtual care (telemedicine). Everyone undergoes periodic medical evaluations regarding cardiovascular, nutritional, and psychological risks.
Water Consumption and effluents

In 2020, we consumed 18.5 thousand cubic meters of water (18.6 megaliters), supplied by the public water supply network - Rio de Janeiro State Water and Sewage Company (Cedae). The water is used, among other activities, for human consumption, distribution to the bathrooms and restaurants, irrigation, cleaning, and cooling. Resources are also consumed in our laboratories for the use of the glasswasher, the water purifier, the analytical water product system, the rain simulation tests, among others.

In 2020, projects were developed and some improvements were made to the facilities, such as renovation of the septic tank in Block A of the Adrianópolis unit; replacement of several stretches of piping for drinking water and fire-fighting at the Adrianópolis unit, allowing the reduction of eventual leaks; and project to remodel the men’s bathroom of Block I of the Adrianópolis Unit, allowing for the replacement of the piping and the sanitary hydraulics equipment.

The main effluents we generate are laboratory effluents, that are routed through pipes to three tanks, installed outside on containment basins, in order to contain any leaks. The collected effluent is destined to a company duly licensed to treat industrial effluents.

In relation to sanitary effluents, those generated by the Fundão Unit are discharged directly into the public sewage network, which sends them for adequate treatment in a Sewage Treatment Station (ETE). In the water and oil separator, a monthly collection is made to identify if the destination of the liquid effluent is in accordance with the standards adopted by Cepel.

Effluent discharge in 2020 (in megaliters)

<table>
<thead>
<tr>
<th></th>
<th>Fundão</th>
<th>Adrianópolis</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitary effluents</td>
<td>9.48</td>
<td>0.44</td>
<td>9.93</td>
</tr>
<tr>
<td>Chemical effluents</td>
<td>0.03</td>
<td>-</td>
<td>0.03</td>
</tr>
<tr>
<td><strong>Total per unit</strong></td>
<td><strong>9.51</strong></td>
<td><strong>0.44</strong></td>
<td><strong>9.96</strong></td>
</tr>
</tbody>
</table>

Remark: The values were converted from cubic meters to megaliters considering that each cubic meter corresponds to 0.001 megaliters. Fundão: 9,484.22 m³ of sanitary effluents and 27.78 m³ of chemical effluents. Adrianópolis: 443.93 m³ of sanitary effluents.
Waste

The process macro-flow for waste disposal, storage, and destination that we have adopted is divided into four steps, represented in the following infographic:

1. **Collection and Segregation**
   For the collection and segregation, specific collectors are used, in accordance with the National Council of Environment (Conama) Resolution No. 257, of 2001.

2. **Packaging**
   Stage in which the solid waste is stored in designated and appropriate containers, according to its characteristics and possibilities for reuse, treatment, or recycling.

3. **Storage**
   We have a temporary storage tank for hazardous waste, with separate partitions for liquid and solid hazardous waste, as well as an area reserved only for recyclable waste from selective collection.

4. **Transportation, Treatment and Final Disposal**
   We hire licensed companies for the provision of continuous services and sporadic services of transportation, treatment, and final disposal of waste. The destination company presents in its license the authorization for each specific treatment.

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**EcoCepel Project**

This project aims to encourage and expand the practice of selective collection among our employees for environmentally appropriate disposal, in order to preserve natural resources and reduce the volume of waste sent to landfills. Through the initiative, information is provided on conscious disposal and appropriate locations are made available for the collection of burned-out light bulbs and used batteries and cooking oil.

**Eletrobras Cepel**

**Total waste generated in 2020 (in tons)**

- Fundão Unit: 78.77
- Adrianópolis Unit: 110.13
- Total: 188.90

Note: the total does not include the 1,000 units of lamps dispensed by Adrianópolis, because the data could not be collected in tons by this unit.
Our main objective when managing the use of energy is to guarantee the achievement of goals and indicators related to the topic, in order to avoid consumption and, consequently, unnecessary expenses. An action plan created from energy diagnostics conducted in the first half of 2018 is underway. In 2020, the actions we carried out resulted in the reduction of 15,170.6 GJ in energy consumption, including fuel and electricity. There was a reduction of 27 GJ and 755.9 GJ, respectively, in the use of energy from renewable and non-renewable fuels. The implementation of a proprietary system for energy management is underway, which will facilitate the operation and ensure the savings estimated in the feasibility studies.

**Energy consumption**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumption of energy from non-renewable fuels (GJ)</td>
<td>2,166.51</td>
</tr>
<tr>
<td>Consumption of energy from renewable fuels (GJ)</td>
<td>369.35</td>
</tr>
<tr>
<td>Electricity consumption (GJ)</td>
<td>17,148.38</td>
</tr>
<tr>
<td><strong>Total Energy Consumption (GJ)</strong></td>
<td><strong>19,684.24</strong></td>
</tr>
</tbody>
</table>

Several of our projects aim to promote energy efficiency and the reduction of energy consumption by society. We support Eletrobras in the development of tests, studies and certifications of electro-electronic equipment for the Brazilian Labeling Program (PBE), managed by Inmetro. These activities take place in the scope of the National Program for the Conservation of Electrical Energy (Procel), which encourages the reduction of energy consumption by means of programs to combat waste and efficient use.

In 2020, we started the homologation process with Inmetro of the Photovoltaic Systems Laboratory - Solar Simulator, inaugurated in 2019, to enable it to certify photovoltaic modules for the PBE.
Emissions

Annually, we perform an inventory of greenhouse gas emissions (GHG) according to the guidelines of the GHG Protocol and the Intergovernmental Panel on Climate Change (IPCC). In 2020, we registered total emissions of 526.4 tons of CO2 equivalent, among which the most expressive were scope 2 (indirect emissions, from the acquisition of electricity), which totaled 312 tCO2e. Scope 1 (direct emissions) and 3 (other indirect emissions) emissions were 34.8 and 179.6 tCO2e, respectively.

The monitoring of our GHG emissions and those of Eletrobras Companies, as well as the compilation and processing of inventory data, is carried out by means of the Emisfera platform, which can be used by any company in the energy sector that wishes to inventory its emissions.

In 2020, we captured carbon by planting, at the Adrianópolis Unit, 94 tree seedlings of the Atlantic Forest biome, equivalent to an area of 0.16 hectares.

Projects

Three projects are underway in which we help Eletrobras companies measure their emissions and seek compliance with SDG 13. The Carbon Balance in Hydroelectric Power Plants (Balcar) Project aims to increase scientific knowledge about GHG emissions in these structures and thus help companies in the accounting and monitoring processes.

In 2021, we will continue to develop, as part of Balcar, the Mo-HidroGEE, a model for hydrodynamic simulation of reservoirs with greenhouse gas flow balance; and to participate in IEAHYDRO, coordination of the working group of international experts on greenhouse gas emissions in hydropower under the International Energy Agency.

Through the MudClima Project, we are investigating possible changes in the rainfall and flow regime in Brazilian river basins, and how these affects hydroelectric generation. In 2020, MudClima gained a new functionality with the development of the model Multicriteria Decision Support System for Long Term Generation Expansion Planning considering GHG Emissions (Sadplane). In 2021, we will launch a prototype of the model, in line with the strategies discussed within the Eletrobras Companies Generation Expansion Planning Subcommittee (SPEG/Eletrobras).

With the Carbon Footprint project, we are developing a reference methodology for the elaboration of carbon footprint studies for Eletrobras Companies.
2020 Outcome

In 2020, we had very expressive economic results when compared to the previous year, which shows the significant evolution of Cepel in the management of its resources, highlighting: the increase of 225% in the result for the year, which reached R$30.8 million in surplus; and the reduction of Operating Expenses by 24.2%.

Net Operating Income - NOI

Our NOI remained stable, with a small reduction of 2.2% compared to the previous year - R$ 227,102 thousand in 2020 compared to R$ 232,130 thousand in 2019.

Operating Expenses

The Operating Expenses showed important decreases in the items personnel (24.2%), third-party services (9.0%) and general expenses (38.1%).

As for the evolution of personnel expenses, it is linked to the reduction in the number of employees, resulting from the Consensual Dismissal Plan (PDC). The expenses with third-party services and general services had their reduction associated with the pandemic issues and internal efforts.

It should also be noted that the Zero-Based Budgeting methodology applied brought the Center an expenditure reduction of around R$11 million.

Financial income

The financial income decreased from R$3.3 million to R$0.96 million due to the reduction in interest rates in Brazil. The financial investments are restricted to the Banco do Brasil Extramarket Fund, whose profitability is linked to the SELIC rate.

The Operating Expenses showed important decreases in the items personnel (24.2%), third-party services (9.0%) and general expenses (38.1%).
Credits

**Coordination**
Mércia Surene de Lima Fernandes

**Photos**
Cepel’s and Eletrobras Companies’ Photo Collection

**Redaction and editorial consultancy**
Visão Sustentável

**Graphic design**
Juliana Fioroto

**Diagramation**
Visão Sustentável

**Selection, Collection and Analysis of Disclosures**
Visão Sustentável