

**Our journey
against climate
change**

2024



Summary



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Message from the leadership

Talking about climate change is not talking about a future threat.

The climate challenge is a reality here and now, as evidenced by periodic reports, rigorously prepared with scientific method by experts around the world. Recent extreme events – such as the historic drought in the Amazon at the same time floods hit the South and an extreme heat wave that made the month of September 2023 the warmest in the last 80 years – show that the effects of climate change is already a reality for Brazilians.

According to data from NOAA¹, the United States' atmospheric and oceanic authority, the last twelve years (2010-2022) were the warmest since measurements began in 1880, and in 2022, the average temperature raised by 1.06°C against pre-industrial levels. This is not a cyclical phenomenon: since the 1960s, the average temperature has raised consistently decade by decade with a tendency to accelerate. The five warmest years in history were recorded in the last five years, and the last 14 years have also set 14 global records for melting ice in the Arctic.

Droughts, extreme temperatures, hurricanes, floods, changes in rainfall, insolation and wind patterns are other manifestations of this phenomenon.

The threat is across the planet and has consequences for the economy, food security, water availability, city infrastructure, biodiversity and human rights, among others. For the Brazilian electric power sector, climate change is of particular urgency, given the risks and impacts imposed on the country's energy resources and security of supply.

However, the energy industry is not only recognized as one of those affected by climate change, but also a cause of it: according to the World Resources Institute, the energy sector is responsible for around 74% of global emissions, with around 32% concentrated in the electricity and heat generation sector.

¹NOAA - National Oceanic and Atmospheric Administration.

Sources:

climatewatchdata.org/key-visualizations?visualization=3
ourworldindata.org/ghg-emissions-by-sector
noaa.gov/news/2023-was-worlds-warmest-year-on-record-by-far
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Message from the leadership

The Brazilian electricity sector is mainly anchored in low-carbon energies, with a special participation of hydroelectric plants, which corresponded to about 62% of the Brazilian electricity matrix, while wind power totaled 12%, and fossil fuel thermal sources represented 10%, according to the National Energy Balance for the year 2022.

CPFL is among the leaders in renewable electricity generation in Brazil and, as an important player

for the country's infrastructure, we are committed to the transition to a low-carbon economy and face the challenge of climate change with a sense of urgency, responsibility and determination.

With the support of State Grid, the largest energy company in the world, and in line with its actions, we want to transparently declare our vision and position on the subject and share with society our journey, which involves:

To value our vocation for sustainable energy production with the commitment to reach 100% of generation from renewable sources by 2030.

Engage the supply chain in the effort to tackle climate change, encouraging and supporting the decarbonization of its processes.

Invest in adaptation actions, aiming at the continuity and quality of service to our customers.

Invest in electric mobility solutions in our operations and through innovation projects, which allow the transport sector to reduce its emissions.

Actively participate in the main discussion forums and search for solutions on the subject.

Monitor our GHG emissions, committing to reduce 56% of total emissions by 2030, based on the year 2021.

Achieve carbon neutrality from 2025 by articulating mitigation actions and voluntarily offsetting while reducing.

Promote circularity in our operations and provide low-carbon solutions for our customers.

This information, our goals, performance monitoring metrics, and ongoing initiatives are part of this document.

Message from the leadership

Special topic: challenges in Rio Grande do Sul

CPFL Energia is committed to addressing the challenges of climate change and its human consequences. Recently, we observed the effects of an extreme weather event in Rio Grande do Sul, which caused devastating floods and inestimable losses to the population of the region. In the context of the disaster that occurred, the company has been acting proactively to offer support to both the population and its impacted employees.

In partnership with the National System Operator (ONS), CPFL Transmissão acted quickly to restore the temporary connection of the transmission lines affected by the floods. We are working closely with other institutions and companies to provide emergency aid and plan the reconstruction of the affected areas,

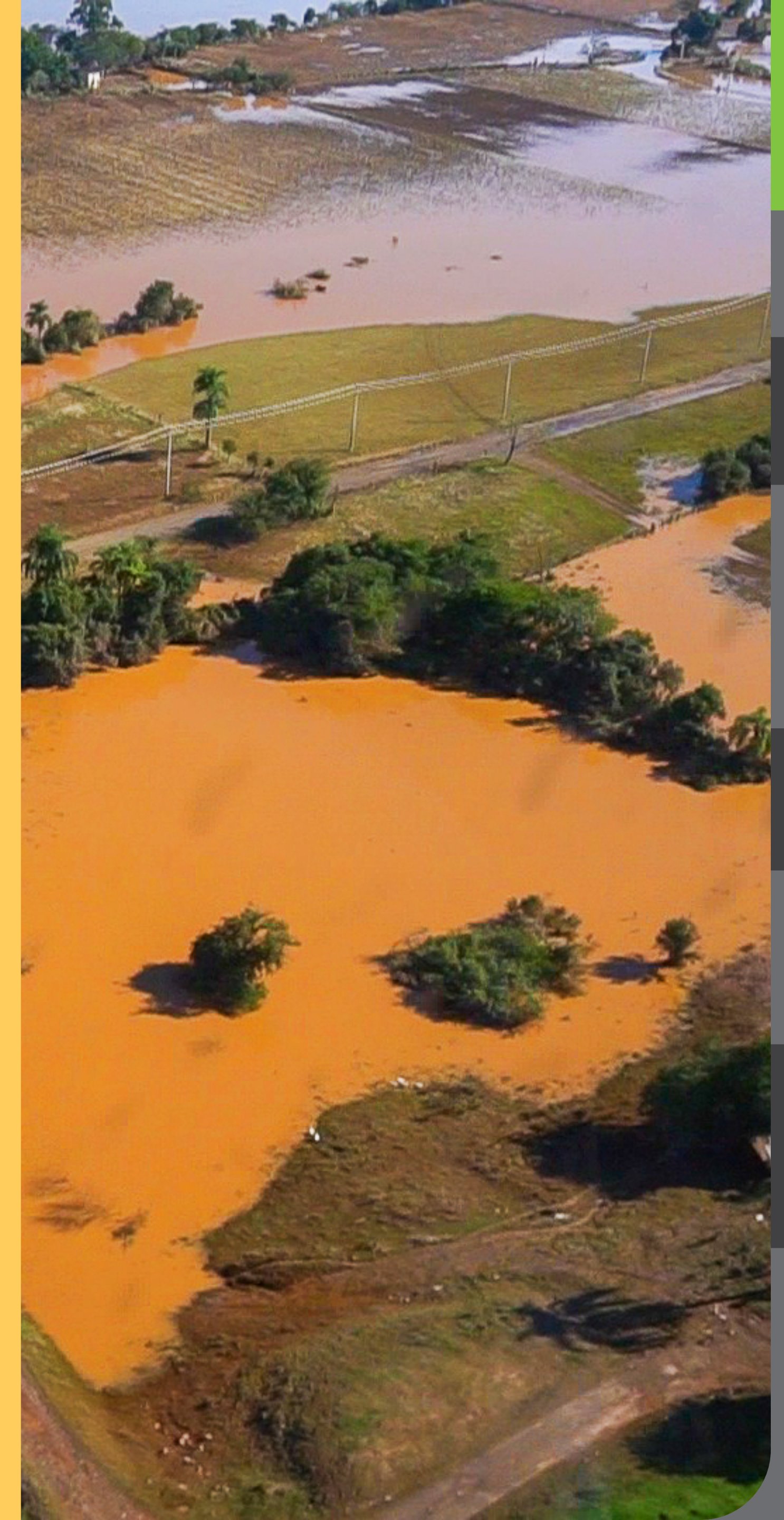
including through the mobilization of employees from different regions, such as electricians and support teams.

For employees located in Rio Grande do Sul, CPFL has implemented a comprehensive set of measures to provide financial support and practical assistance, from the anticipation of food vouchers and meal vouchers to the temporary relaxation of benefits such as daycare and babysitting assistance, among others.

We also highlight the transfer made by RGE of more than R\$ 6.2 million, through the CPFL Institute, to the State Fund for Support to Social and Productive Inclusion (FEAISP), which then transferred it to the Emancipa Família Gaúcha project.

Two thousand families were benefited in 30 municipalities. The State Grid Corporation of China also donated to the Government of Rio Grande do Sul the equivalent of R\$ 3 million in products for the affected population.

In addition, the Semear program has played a key role in supporting the population affected by the floods in Rio Grande do Sul. Through donation collection initiatives, the program has mobilized physical donations of products such as blankets, food, water and clothing, as well as financial donations to help NGOs and local communities and the employees themselves impacted by the disaster.





Who we are

We are CPFL Energia, one of the largest companies in the Brazilian electricity sector and we operate in all energy segments: generation, transmission, distribution and differentiated solutions for customers.

We position ourselves as one of the leaders in the supply of renewable energy, a pillar that permeates the company's entire business strategy, anchored in the mission of providing sustainable, affordable and reliable energy at all times, making people's lives safer, healthier and more prosperous in the regions where we operate.

Our shares are listed on B3's Novo Mercado (*“New Market”*) in Brazil. Since 2017, our majority shareholder has been the State Grid Corporation of China (SGCC), which holds 83.7% of our share capital. In addition to China, where it supplies 88% of the country's territory and more than 1.1 billion people, SGCC operates in Brazil, the Philippines, Portugal, Australia, Italy, Greece, Chile, Hong Kong and Oman.

The synergy with SGCC drives access to the most advanced technologies and technical and value-generating know-how of the world's largest energy company.

Learn more at

grupocpfl.com.br/conheca-gente

grupocpfl.com.br/institucional/state-grid

www.sgcc.com.cn/ywlm/index.shtml

Where we operate

The businesses are organized in the segments of generation, transmission, distribution and solutions for customers, as well as companies that carry out activities to support the Group in the administrative, financial and service areas.

Generation

We currently have two companies: CPFL Geração, which operates with hydraulic and thermal sources, and CPFL Renováveis, which is focused on wind, biomass, small hydroelectric and solar sources and is controlled by CPFL Geração (51%) and CPFL Energia (49%).

Through the generation segment, CPFL positions itself as an agent capable of increasing the availability of renewable energy to consumers, operating with a broad portfolio with various energy sources and generation technologies. CPFL Renováveis is currently the main growth vector on this front, having, in addition to the listed assets, a plant under construction, the SHP Cherobim, which will have an installed capacity of 28 MW and serve about 11 thousand homes.

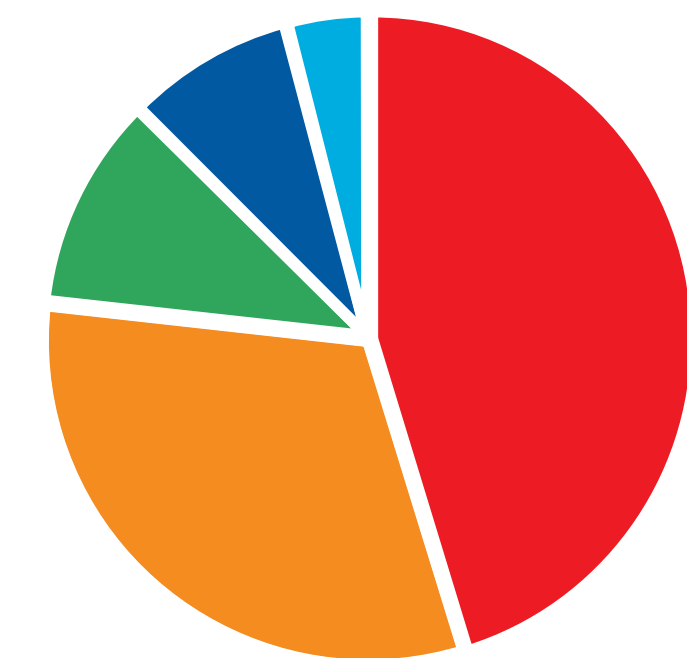
Our assets

- 49 wind farms
- 25 small hydroelectric plants (SHPs)
- 21 hydroelectric generating plants (MHPs)
- 8 hydroelectric plants
- 8 biomass thermoelectric plants
- 2 thermoelectric plants (UTE)
- 1 solar plant

EBITDA R\$ 3,7 billion

3rd largest renewable generator in the country, with 4.4 GW of installed capacity (including Bio Formosa).

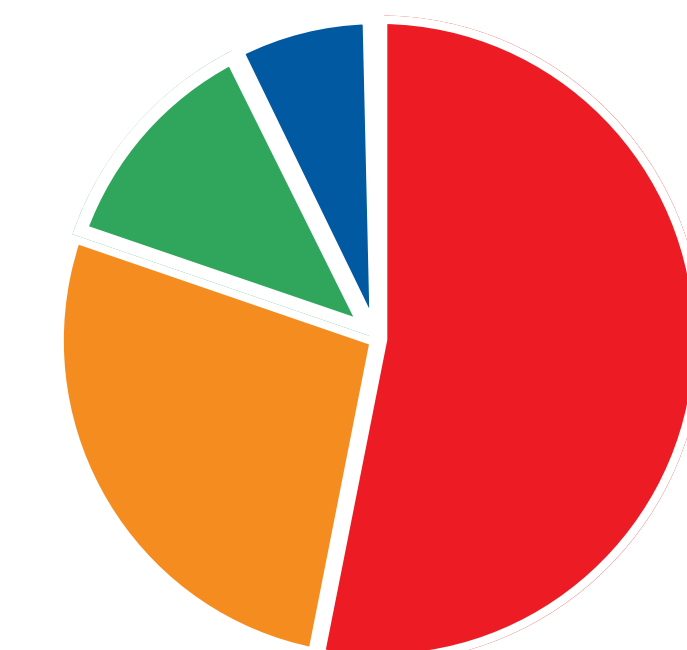
Diversified portfolio.



Installed capacity by source in 2023 (MW).

Hydroelectric: 1.996 (45%)
Wind: 1.390 (32%)
SHPs and MHPs: 472 (11%)
Biomass: 370 (8%)
Thermal: 182 (4%)
Solar: 1,1 (0,02%)

The numbers consider the installed capacity of each project, proportional to the shareholding interest of CPFL Geração or CPFL Renováveis. The biomass category considers Bio Formosa (40 MW), which left CPFL Energia's portfolio at the end of December 2023



Net energy production by source in 2023 (GWh).

Hydroelectric: 7.938 (53%)
Wind: 4.054 (27%)
SHPs and MHPs: 1.855 (12%)
Biomass: 1.041 (7%)
Thermal: 27 (0,2%)
Solar: 1 (0,01%)

Data sources: Annual Report and Quarterly Earnings Release

¹ Ranking da Aneel: <https://www.gov.br/aneel/pt-br/centrais-de-conteudos/relatorios-e-indicadores/distribuicao/ranking-de-continuidade/2022>

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Distribution

Through CPFL Paulista, CPFL Piratininga, CPFL Santa Cruz and RGE, we distribute energy to 687 municipalities in São Paulo, Rio Grande do Sul, Minas Gerais and Paraná, reaching approximately 10.5 million customers in the residential, commercial, industrial, rural, public lighting and other segments.

Our performance in relation to DEC (duration) and FEC (frequency) of interruptions is a benchmark in Brazil. In ANEEL's 2023 Global Continuity Performance (DGC) ranking, which measures the continuity of the energy supply service, CPFL Santa Cruz was elected the best distributor, and CPFL Paulista, CPFL Piratininga and RGE were among the 15 best placed.

10,5 million customers.

687 municipalities, **343 thousand km** of distribution lines and **591** substations.

EBITDA R\$ 7,9 billion

Largest distribution company, with 4 concessions in the most developed regions of Brazil.

Where we operate

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Transmission

The transmission networks make the connection between the generation assets and the distributors.

The electricity transmission network in Brazil is a large interconnected system, which provides the exchange of energy between the subsystems, exploring the meteorological and hydrological diversity of energy resources, and contributing to the security of supply, the development of renewable energies and the cheapening of energy for the consumer.

CPFL is present in the transmission segment, with assets totaling more than 6.4 thousand kilometers distributed in the states of Rio Grande do Sul, Santa Catarina, São Paulo and Ceará

6.436 km of line and **86** substations.

CPFL Transmission, Piracicaba, Morro Agudo e Maracanaú.

EBITDA R\$ 0,9 billion

R\$ 1,5 billion of annual revenue allowed.

Solutions

CPFL Soluções is a market solutions platform to generate value and boost customer competitiveness, with a portfolio encompassing energy efficiency, solar energy, carbon credit trading and I-RECs, energy management, free energy market and maintenance, construction, operation and retrofit of electrical installations.

EBITDA R\$ 0,3 billion

2,1 thousand customers.

1,3 million renewable energy certificates (I-REC) generated from wind and SHPs.

2,8 million carbon credits (REC) issued per year

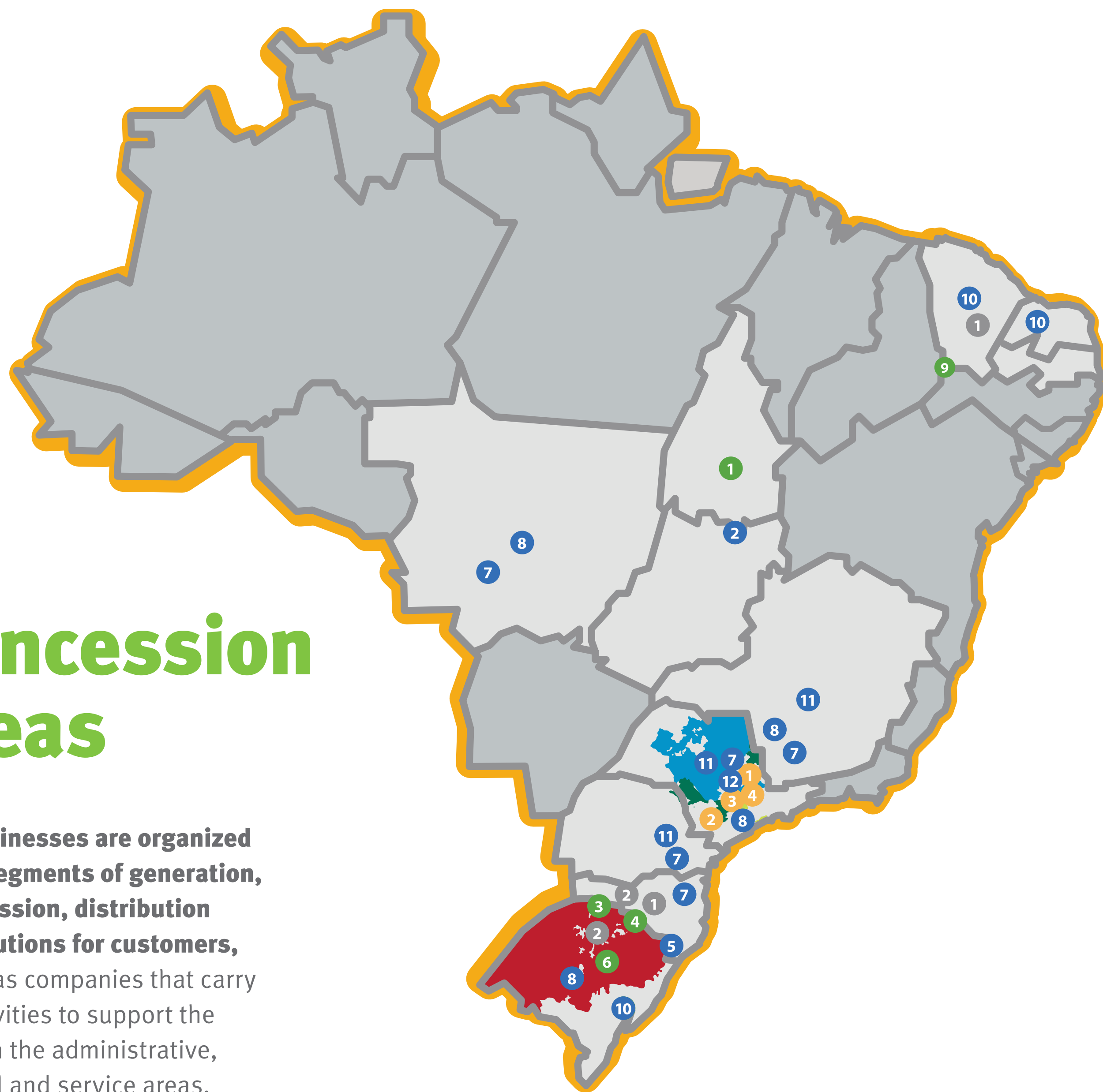
Total accumulated EBITDA | R\$ 12,8 billion

Data sources: Annual Report and Quarterly Earnings Release

¹ Ranking da Aneel: <https://www.gov.br/aneel/pt-br/centrais-de-conteudos/relatorios-e-indicadores/distribuicao/ranking-de-continuidade/2022>

Concession areas

The businesses are organized in the segments of generation, transmission, distribution and solutions for customers, as well as companies that carry out activities to support the Group in the administrative, financial and service areas.



DISTRIBUTION



SERVICES



GENERATION



- 1 UHE Luis Eduardo Magalhães
- 3 UHE Foz do Chapecó
- 4 UHE Campos Novos
- 6 Complexo Ceran UHE Monte Claro
UHE Castro Alves
UHE 14 de Julho
- 9 UTEs
Termoparaíba e Termonordeste



- 2 UHE Serra da Mesa
- 5 UHE Barra Grande
- 7 26 PCHs
10 (MG), 7 (SP), 6 (SC), 2 (PR), 1 (MT)
- 8 22 CGHs
15 (SP), 4 (RS), 2 (MG), 1 (MT)
- 10 49 Parques Eólicos
12 (CE), 33 (RN), 4 (RS)
- 11 8 UTEs (Biomassa)
5 (SP), 1 (MG), 1 (PR)
- 12 Usina Solar Tanquinho (UFV) (SP)

TRANSMISSION



- 1 86 subestações
- 2 142 linhas de transmissão

Considerando: CPFL Transmissão, CPFL Piracicaba, CPFL Morro Agudo e CPFL Maracanaú.

UHE - Hydroelectric plants
PCH - SHP (small hydroelectric plants)
CGH - MHP (hydroelectric generating plants)
UTE - Thermoelectric plants
UFV - Photovoltaic plants

ESG in strategy

Message from
the leadership

Who
we are

ESG in
strategy

Climate and the
electricity sector

Climate
risks

Goals and
metrics

Actions and
initiatives

Engagement
and transparency

Sustainability governance

Based on the Sustainability Policy, our governance model provides for the monitoring of actions by senior leadership and the dissemination of sustainability management in all businesses.

In 2020, we began the execution of the Sustainability Plan and, with focus and commitment, we advanced in the objective of driving the transition to a more sustainable model of energy production

and consumption and with the expansion of the positive impacts of our business model in the community and in our value chain.

In 2022, considering the movements of the market and the company itself, we decided to move even further. Our strategy evolved into the 2030 ESG Plan, which came into force in 2023, with more comprehensive and ambitious public commitments.

Decision making

Sustainability decision-making involves several governance bodies and, on a quarterly basis, the Sustainability Committee, the Executive Board, the Strategy, Growth, Innovation and ESG Committee and the Board of Directors monitor the execution of the plan.

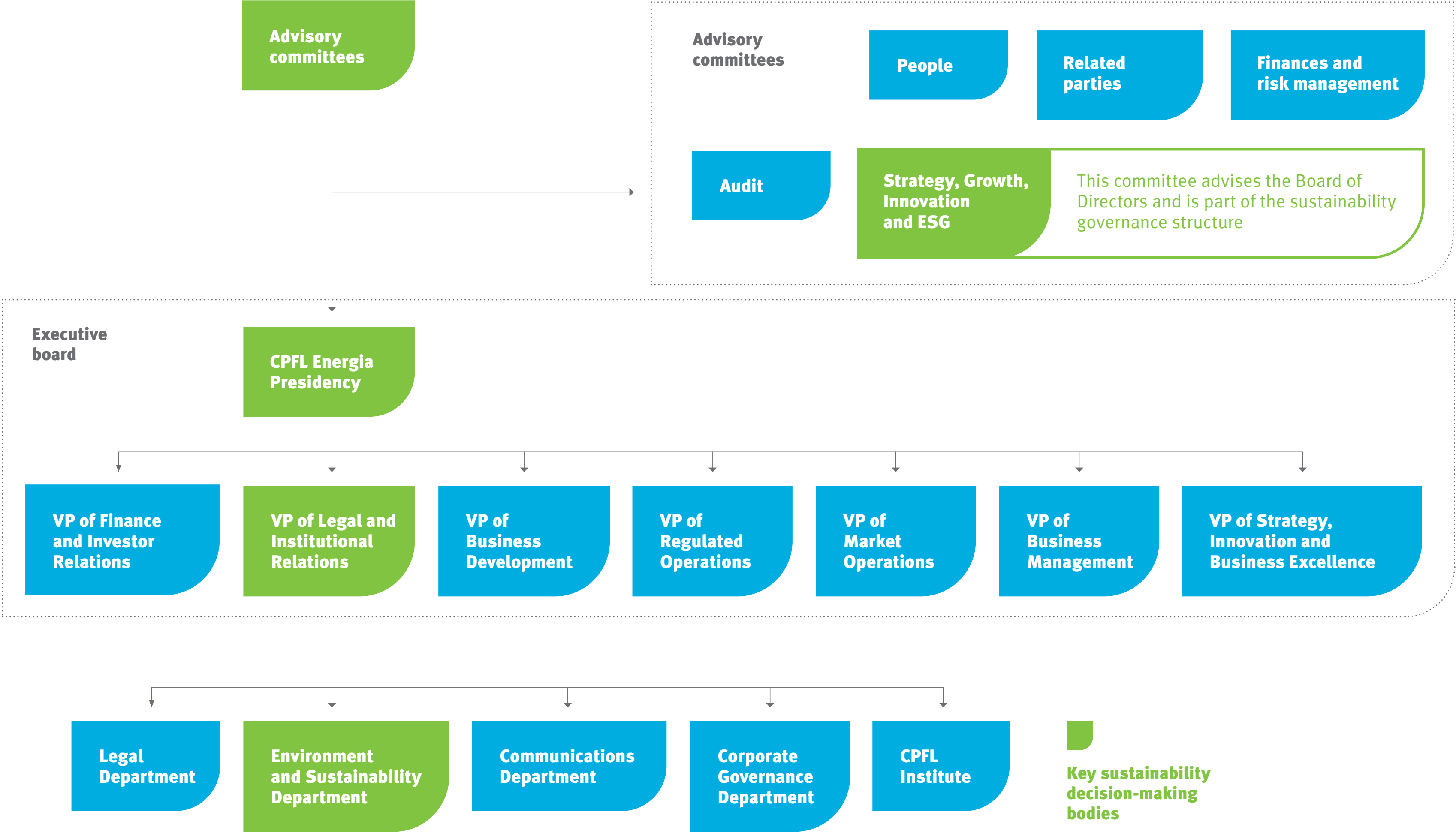
**SUSTAINABLE DEVELOPMENT GOALS**

Commitment to a global agenda

State Grid, our majority shareholder, and CPFL Energia are committed to the 2030 Agenda and the Sustainable Development Goals (SDGs) of the United Nations (UN).

Through our ESG Plan, we connect our strategy to the SDGs and, annually, we will seek larger goals, aligned with the evolution of the business plan, which generate shared value with society.

Sustainability governance





ESG Plan 2030

In order to further evolve our ESG agenda – as we have made rapid progress on the commitments previously announced in the 2020-2024 Sustainability Plan – CPFL Energia developed and approved the 2030 ESG Plan, in November 2022, with its leaders and internal stakeholders, which was updated in 2023 to represent the company's ambition in its most recent form.

The process to reach the new commitments involved the analysis of trends and practices in the electricity sector, including critical issues for the future of the business; internal diagnosis; interviews with leaders; and construction of proposals by the internal areas with 12 thematic meetings.

Thus, under a vision interconnected with the Strategic Planning roadmap, taking into account a long-term vision and the results already achieved so far, we arrived at the validation of our new ESG strategy. The unfinalized commitments of the 2020-2024 Sustainability Plan were incorporated into the 2030 strategy, in order to maintain continuous action.

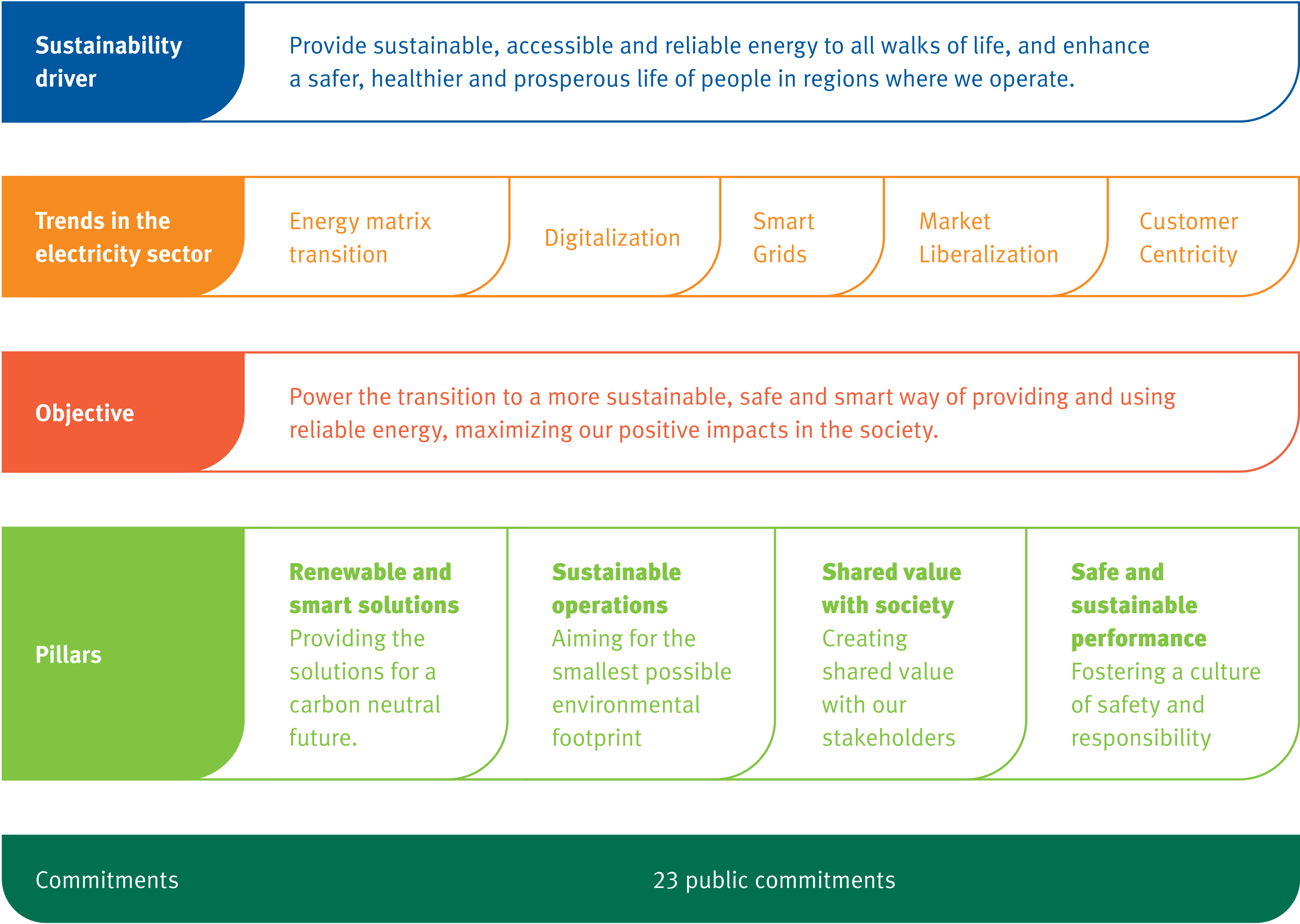
The main challenges of the new ESG Plan are the greater scope of ESG aspects and the long-term vision (2030) more aligned with the 2030 Agenda and the UN Sustainable Development Goals (SDGs).

Driving the transition to a more sustainable, safer, and smarter way of producing and consuming energy, maximizing our positive impacts on society, summarizes the objective of the 2030 ESG Plan.

Below, and in the following pages, we detail the structure of the strategy in four pillars, our long-term vision for the topics incorporated, as well as the 23 commitments made publicly.

The leadership bodies, including the Sustainability Committee, the Executive Board, the Strategy, Growth, Innovation and ESG Committee, and the Board of Directors, according to the structure of our Sustainability Management, periodically monitor the execution, evolution and status of the goals of the 2030 ESG Plan, effective as of 2023.

The 2030 ESG Plan also undergoes an annual update.



Our commitments:

ESG commitments updated
and disclosed in January 2024.

Notes:

1. Neutralization in 2026 referring to the 2025 GHG inventory.
2. Emissions reduction baseline: 2021 total emissions in scopes 1, 2, and 3.
3. Waste disposal of Campinas Headquarters, EA Jundiaí, CPFL-T Porto Alegre Headquarters, RGE São Leopoldo Headquarters, Former RGE Caxias Headquarters, CSC Indaiatuba, CPFL Serviços Rio Pardo.
4. Transformers, voltage regulators, reclosers.
5. As defined in SBM, critical for operation.
6. Distributors + CPFL Renováveis - the portfolios of the other businesses will be evaluated and worked on in the period, and it is not possible to make a goal proposal now.
7. Guardião da Vida and Arborização + Segura.
8. CPFL Energia, its subsidiaries and affiliates with the same management and governance model, in which CPFL Energia has management in the administration.
9. Except employees with a suspended employment contract, either by agreement between the parties or by legal imposition, as established in the CLT.

Renewable and smart solutions

- 1** Generate 100% renewable energy by 2030.
- 2** Become carbon neutral from 2025¹, reducing 56%² of scope 1, 2 and 3 missions by 2030.
- 3** Provide low carbon solutions to our customers, with annual targets for IRECs and carbon credits revenues.
- 4** Reach at least 15% of Electric Fleet (operational trucks) in Distribution companies by 2030.
- 5** Invest at least R\$ 40 million in green hydrogen technologies by 2030
- 6** Reach at least R\$ 580 million in investments in smart energy solutions by 2027.

Sustainable operations

- 7** Consolidate CPFL ecoefficiency management program, setting targets by 2024 to promote conscious consumption of energy, water and to reduce landfill waste disposal³.
- 8** Phase out single-use plastics in our administrative units by 2025.
- 9** Create CPFL's Biodiversity Positioning by 2025 to maximize the benefits and value generated by our operations for the environment and society.
- 10** Refurbish at least 70.000 electrical network equipment⁴ by 2030.
- 11** Ensure 100% of the main grid components destined for recycling or reverse chain systems.

Society shared value

- 12** Invest at least R\$ 230 million in socioenvironmental projects that maximize transformation in the community by 2030.
- 13** Invest R\$ 140 million in energy efficiency initiatives at public hospitals by 2025.
- 14** Reach 40% of minority groups in leadership roles by 2030.
- 15** Assess 100% of critical suppliers in sustainability criteria⁵ and achieve at least 85% of our spending⁶ with companies that present advanced practices in sustainability by 2030.
- 16** Maintain at least 90% of attendance by digital channels.
- 17** Sustain at least 1 distribution company listed among the top 3 in the ANEEL Consumer Satisfaction Index - IASC.

Safe and reliable business

- 18** Strengthen safety culture to achieve zero fatalities and reduce frequency and severity rate of accidents involving employees and service providers.
- 19** Invest R\$ 50 million in awareness and risk reduction projects⁷ for the population by 2030.
- 20** Promote a healthy work environment, increasing awareness on mental wellbeing and establishing supportive actions for our employees.
- 21** Ensure 100% of employees⁸ trained in the company's Integrity Program.
- 22** Train 100% of administrative employees⁹ in security and data protection.
- 23** Continuously pursue the best practices of accountability, transparency, fairness and responsibility.

Encouraged by State Grid, our actions to tackle climate change are primarily guided by 15 of the 23 public commitments.

1
Generate 100% renewable energy by 2030.

This goal signals that renewable sources are a priority, regardless of future business expansion. Currently, 96% of the company's production capacity is focused on renewable energy sources.

2
Carbon neutrality from 2025 and reduction of GHG emissions.

Emissions from all our operations will be offset as of 2025, an effort taken in a complementary way to other decarbonization initiatives, always prioritizing mitigation and achieving a 56% reduction by 2030.

3
Low-carbon solutions.

The goal is to expand the offer of I-RECs (international renewable energy certificates) and carbon credits through CPFL Soluções, so that customers can offset their GHG emissions.

4
Electrification of the fleet.

Electrification is a way for us to improve energy efficiency and decrease the carbon intensity of our operational fleet. This way we can also contribute to the reduction of air and noise pollution in urban centers.

5
Investment in green hydrogen.

Hydrogen is an emerging and innovative technology that enables the decarbonization of sectors that are difficult to mitigate emissions, such as heavy transport. Therefore, through hydrogen, we believe that we can contribute to the energy transition beyond the electricity sector.

6
Investment in smart solutions.

The incidence of extreme weather events, an effect of climate change, presents a risk to the continuity of electricity supply to customers. Several forms of adaptation can be taken, and we see investment in smart solutions as a way to strengthen the grid, which becomes increasingly essential for a quality energy supply throughout our value chain.

7
Eco-efficiency program.

Energy and water consumption and waste generation are issues closely related to climate. Thus, in association with this pillar and the preservation of the environment as a whole, we are committed to promoting energy efficiency in our operations and the preservation of natural resources such as water and materials.

8
Phasing out single-use plastics.

Waste management within CPFL Energia is a highly relevant topic. In line with the previous commitment to eco-efficiency, we are committed to acting guided by the concepts of the circular economy, reducing our waste generation and in this commitment we give special focus to plastics.

Encouraged by State Grid, our actions to tackle climate change are primarily guided by 15 of the 23 public commitments.

9

Biodiversity positioning.

In order to strengthen our environmental performance, we are committed to improving biodiversity management. Climate change today poses a threat to biodiversity worldwide, however, the protection of biomes and the species contained in them – conserving and recovering them – is essential to limit greenhouse gas emissions and promote climate resilience.

10

Equipment refurbishment.

We are committed to expanding the refurbishment of network equipment, a commitment in line with the concept of circular economy, which allows us to extend the useful life of equipment and reduce our waste generation and consumption of raw materials.

11

Destination to the reverse chain or recycling.

The accumulation of waste in landfills poses risks to people's health and the environment, in addition to being a source of greenhouse gas emissions due to the formation of methane gas. In line with the concepts of circularity, we promote the proper management of waste, contributing to reducing waste destined for final disposal.

12

Investments in socio-environmental projects.

In order to positively impact the communities in the regions where we operate, we invest in projects that contribute to the socioeconomic development of these populations. An example is our desalination project, which provides access to water for the population, an extremely important issue, given the relationship between climate change and water scarcity.

13

Energy efficiency in hospitals.

As part of ANEEL's Energy Efficiency Program, we invest in energy efficiency actions, such as the construction of photovoltaic plants, installation of LED lamps, among others, in public hospitals. This action allows, in addition to the use of clean energy, the reduction of costs for hospitals and the generation of positive impacts for society.

14

Sustainable procurement.

To promote decarbonization in CPFL's operations, it is of paramount importance that suppliers are also part of the efforts. In this way, we intend to establish criteria that prioritize suppliers with production chains more aligned with the sustainability/sustainable practices we seek.

15

Service through digital channels.

CPFL prioritizes customer service through digital channels to facilitate the daily lives of customers. In this way, unnecessary travel and the printing of bills and paper documents are avoided, since it is possible to solve digitally. This is a way to promote simple and efficient communication with our customers.



Climate and the electricity sector

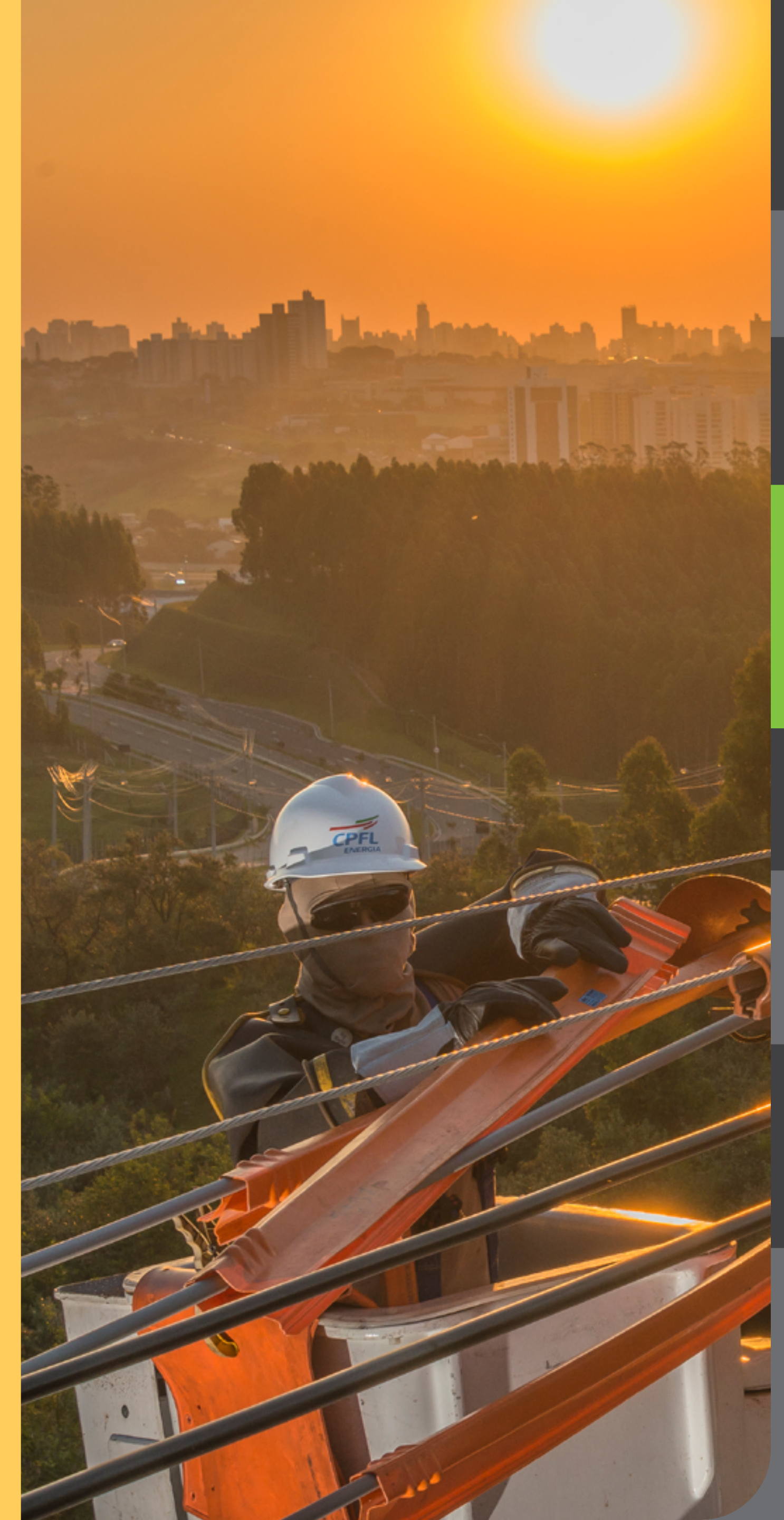
Message from the leadership	Who we are	ESG in strategy	Climate and the electricity sector	Climate risks	Goals and metrics	Actions and initiatives	Engagement and transparency
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Climate change

The urgency of reducing greenhouse gas (GHG) emissions is increasingly present in political and economic discussions about the future of the planet. The development model of society since the Industrial Revolution has culminated in a significant increase in emissions of these gases, especially carbon dioxide (CO₂), which has been causing an increase in the average global temperature.

In 2023, the global average temperature rose 1.45 °C above pre-industrial levels. That year was the sixth warmest on record since 1880, and notably, the last few years (2010-2023) are among the warmest on record.

This increase in average temperature has devastating environmental, economic and social consequences for the planet and the population, such as the loss of biodiversity and the emergence of new diseases.



Climate change

Faced with this situation, the UN moved efforts that resulted in the Paris Agreement, a global treaty adopted in 2015 by the signatory countries of the United Nations Framework Convention on Climate Change (UNFCCC) during the 21st United Nations Conference on Climate Change (COP21).

This agreement establishes measures aimed at reducing GHG emissions from 2020, with the aim of strengthening the response to the threat of climate change, limiting the increase in global temperature to 1.5 °C by 2100, and increasing the capacity of countries to deal with the impacts resulting from these changes.

However, if the world persists on a high-carbon trajectory, global warming could raise the Earth's average temperature by 2.4°C by mid-century and up to 4.4°C by the end of the century.





Brazil

In Brazil, gross GHG emissions reached the mark of 2.4 billion tCO₂e in 2021, the base year of our decarbonization goal, reflecting an increase of 12.2% compared to 2020. When considering carbon removals by secondary forests and protected areas, Brazil recorded a net GHG emission of 1.76 GtCO₂e, compared to 1.49 GtCO₂e in 2020, representing an increase of 17.2%.

The sharp increase in deforestation, especially in the Amazon, was the main cause of this increase in emissions.

The country represents 3% of the world's GHG emissions, being the seventh largest GHG emitter in the world.



Brazil

Brazil has been working to implement measures aimed at reducing GHG emissions and promoting sustainable development. GHG reduction targets, voluntarily established in the Paris Agreement in 2015, called Nationally Determined Contribution (NDC), support these actions.

In the most updated version of its NDC, Brazil committed to reducing GHG emissions by 48% by 2025 and by 53% by 2030, compared to 2005.

To achieve these targets, the country aims to increase the share of sustainable bioenergy in the energy matrix to around 18% by 2030, achieve a 45% share of renewable energy in the composition of the matrix and promote the reforestation of 12 million hectares of forests.

Energy and electricity sector

The energy sector contributed 19% of Brazil's GHG emissions in 2019, with transportation being the largest source of emissions within this sector, accounting for 47% of energy emissions that year, while electricity generation contributed the smallest fraction.

However, in 2021, electricity consumption grew by 4% compared to 2020 and GHG emissions to generate this electricity increased by 46%. This sharp increase in emissions was due to a drop in renewable generation via hydroelectric plants, which is the main source of electricity in the country, and the consequent increase in the use of fossil fuel-powered thermoelectric plants.

In Brazil, hydroelectric plants are responsible for about 61% of the installed capacity of the centralized generation park, while fossil fuel thermoelectric plants correspond to about 14% of the installed capacity and are activated to supply energy in times of unfavorable weather conditions for renewable generation. The remaining 25% of the centralized generation park is divided between wind power (13%), solar photovoltaic plants (4%) and biomass thermal plants (8%)¹.

¹ Installed capacity reference:
ccee.org.br/o/ccee/documentos/CCEE_1068101



Energy and electricity sector

Although electricity generation in Brazil is mostly from renewable sources, it is still necessary to make the transition to a low-carbon scenario in the sector, given its relevance for economic development and the still significant role of thermoelectric plants in the country

Some of the opportunities for reducing GHG emissions in the electricity sector are expanding investment in non-hydro renewable sources, such as solar and wind, encouraging energy efficiency, and promoting the responsible use of electricity.

In addition, the Brazilian electricity sector is vulnerable to climate change due to several effects, such as: changes in precipitation and temperature regimes that can result in unfavorable weather conditions, such as droughts, and put national energy security at risk, risks to the physical integrity of assets due to extreme events, reduction in the predictability of the operation, impairing the planning of expansion and operation and weakening the capacity to manage resources energy prices, increased energy prices in periods of water stress, among others.

¹ Installed capacity reference:
ccee.org.br/o/ccee/documentos/CCEE_1068101



In general, climate change represents a change in the base of energy resources on which the sector was built. In the face of these risks and the challenge brought about by this paradigm shift,

it is essential to build a regulatory, commercial, technological and institutional adaptation plan in the electricity sector,

involving investments in resilient infrastructure, diversification of the electricity matrix and adoption of sustainable practices, with the aim of maintaining and expanding the supply of clean, affordable and reliable energy.

Climate scenarios and risks

Message from the leadership

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Engagement and transparency

Scenarios

With the Paris Agreement, discussed during the COP21 (United Nations Climate Change Conference) in 2015, and approved in 2016, the signatory countries committed to restricting the average increase in global temperature to 2 °C above pre-industrial levels, limiting it, if possible, to 1.5 °C.

In its latest report, published in 2022, the International Panel on Climate Change (IPCC) reiterated the importance and urgency of limiting global warming to 1.5 °C.

The new Report outlined a worrying scenario, in which climate change, although still severe and significant, is less catastrophic in the 1.5°C scenario, when compared to the predictions if the Earth's average temperature rises by 2 °C.

According to the study, human activities have already been responsible for an average global warming of approximately 1.1 °C above pre-industrial levels, and, if we follow the current pace, the expansion to 1.5 °C should be reached in the next two decades.

The IPCC is the world's leading authority on climate change, and within the United Nations (UN) it is responsible for analyzing and systematizing scientific data on the subject.

Learn more at: www.ipcc.ch.

Climate risks

In addition to being one of the main contributors to the accumulation of global GHG emissions, the electricity sector is also one of the main affected.

Particularly in the case of Brazil, where water resources play an essential role, changes in precipitation and other meteorological variables are highly relevant to the security of supply and prices of the energy generated.

The IPCC currently points to some scenarios of possible increase in the global average temperature¹:

Each temperature increase scenario correlates in different degrees of intensity with changes in precipitation, maximum attainable temperature, wind speed, among others.

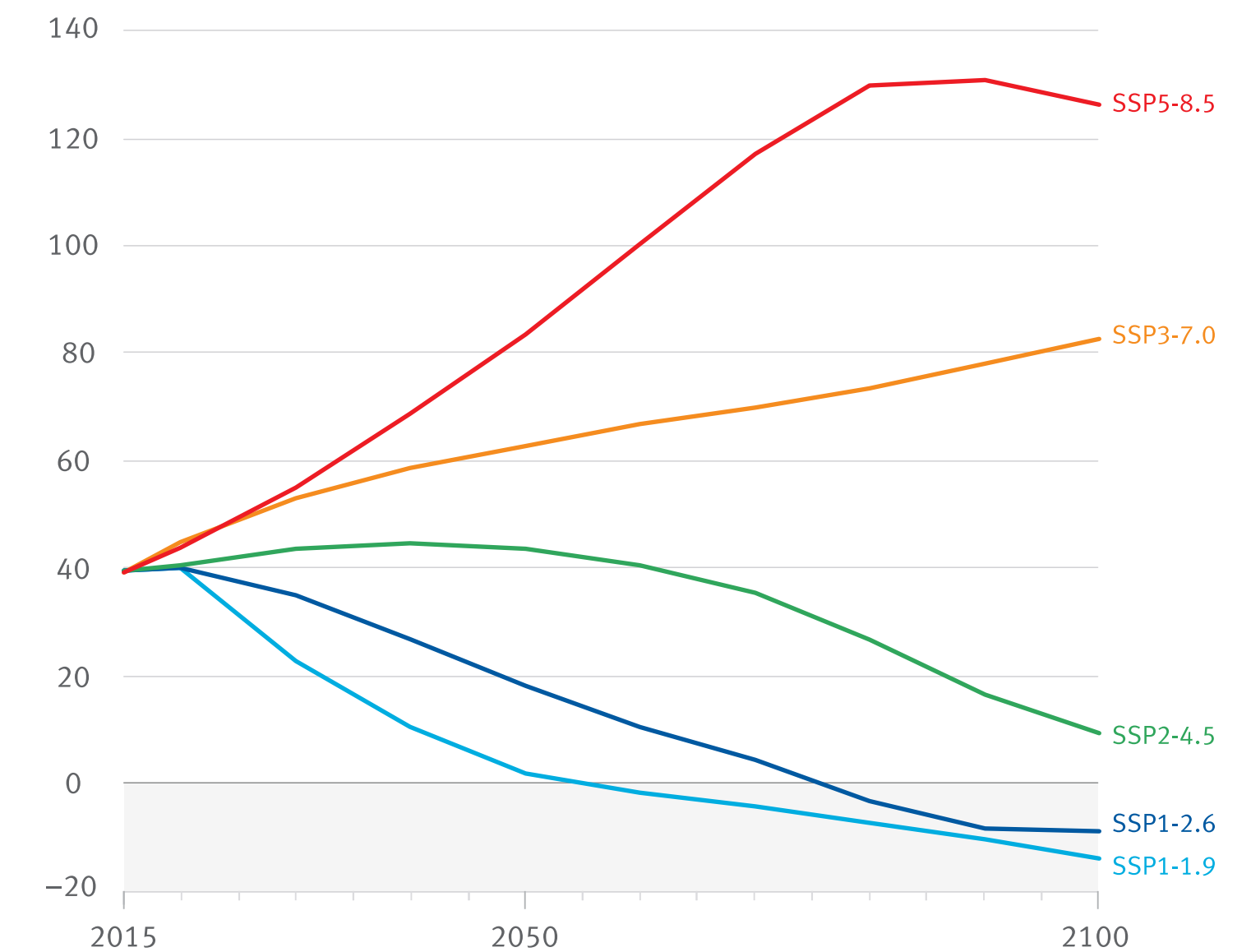
In general, patterns that resemble the El Niño phenomenon can be observed for Brazil, with reduced rainfall in the North, Central and Central regions of the country and an increase in the South region, increase in average and maximum temperatures and warming of the Pacific. An increase in the expected speed of winds is also observed in some regions of the country.

¹ IPCC AR6

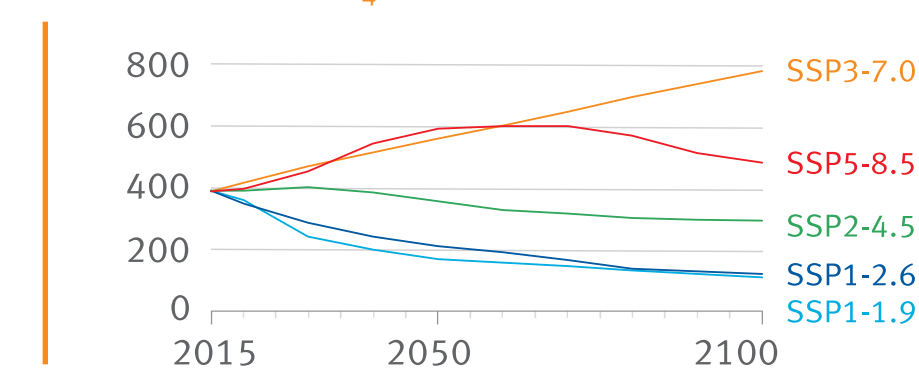
Future emissions cause additional future warming, with total warming dominated by past and future CO₂ emissions¹.

Future annual emissions of CO₂ (opposite) and a subset of major non-CO₂ causing gases (below) in the five illustrative scenarios.

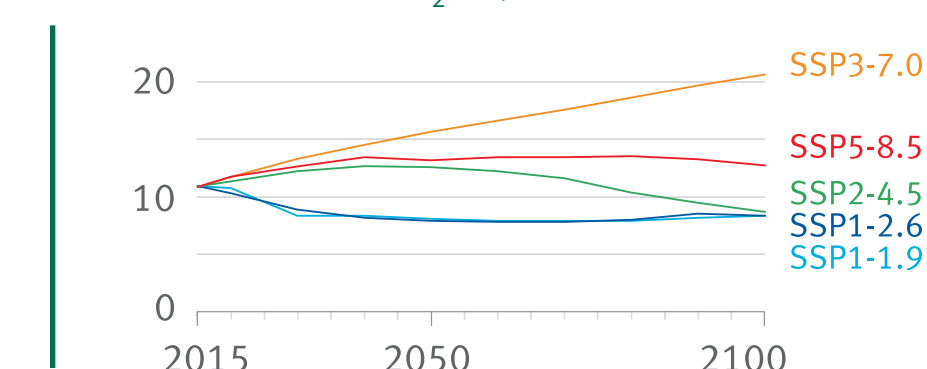
Carbon dioxide (GtCO₂/yr) 140



Methane (MtCH₄/yr)



Nitrous oxide (MtN₂O/yr)



Graphs: https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/publicacoes/relatorios-do-ipcc/arquivos/pdf/IPCC_mudanca2.pdf **Table SPM.1** – Climate Change 2021 The Scientific Basis – Summary for Policymakers – Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.

SSP1-1.9: GHG emissions peak in 2025 and are reduced to zero by 2050. The global average temperature in 2100 is 0.9°C to 1.8°C above pre-industrial levels. **SSP1-2.6:** GHG emissions peak in 2040 and are reduced to 2.6 GtCO₂ per year by 2100. The global average temperature in 2100 is 1.4°C to 2.1°C above pre-industrial levels. **SSP2-4.5:** GHG emissions continue to increase through 2070 and begin to decline, reaching 2.7 GtCO₂ per year in 2100. The global average temperature in 2100 is 2.1 °C to 2.6 °C above pre-industrial levels. **SSP3-7:** GHG emissions continue to increase until 2100, reaching 8.5 GtCO₂ and per year. The global average temperature in 2100 is 2.6°C to 3.9°C above pre-industrial levels. **SSP5-8.5:** GHG emissions continue to increase until 2100, reaching 13.8 GtCO₂ per year. The global average temperature in 2100 is 3.2°C to 5.7°C above pre-industrial levels.

Such alterations can be interpreted in terms of chronic and acute phenomena.

The effect that is most widely known is that of the melting of the polar ice caps and consequent rise in the level of the oceans, threatening coastal populations and the biodiversity of the poles.

However, among other effects, the following can be mentioned:

Changes in water cycles, intensifying rainfall in some regions and reducing it in others, causing droughts.

Increased storms, floods, landslides, typhoons, and hurricanes

Changes in the oceans, including heat waves, acidification and reduced oxygenation, affecting ecosystems and activities dependent on them.

Increased heat-related illnesses, making it difficult to work and stay outdoors; fires facilitated.

Evidently, each scenario represents a different impact and probability of occurrence for the same effect - more pessimistic scenarios are linked to more severe impacts and a higher probability of occurrence. In addition, the more pessimistic the scenario, the shorter the time horizon for the realization of an extreme effect, given that higher emissions are associated with the intensification and acceleration of climate change.

Each of these effects will affect humanity in non-homogeneous ways. In this way, the concepts of exposition, sensitivity, adaptability

and climate resilience². Exposure relates to the degree of probability of an event occurring, while sensitivity refers to the probability of this event having a negative impact on an individual, business, or community. Adaptive capacity, on the other hand, is the ability to deal with climate change through changes that will bring about a decrease in exposure and/or sensitivity.

On the other hand, the ability to withstand climate impacts is called climate resilience and is a consequence of fostering the capacity to adapt.

² Kumar, Nishi. Cities, Climate Change, and Health Equity. Wellesley Institute, 2018.

The CPFL Energia group proposes to adapt as best as possible to the risks arising from climate change in order to strengthen our climate resilience and maintain the quality of service and energy supply to our customers.

The tables on the following pages provide an understanding of the climate impacts and risks raised for the group's operations, as well as the management ways to address these risks.

The classification of risks and opportunities is based on the methodology of the Task Force for Climate-related Financial Disclosures (TCFD), an initiative to which we are signatories, which considers the following categories:

Risks of transition to the low-carbon economy	Legal and political	Market
	Technological	Reputational

Physical risks	Chronic	Acute
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Opportunities	Power supply	Resource efficiency
	Markets	Resilience
	Products and services	

Risks of transition to a low-carbon economy

Category	Trends	Risk	Management
Regulatory and legal	Implementation of the Emissions Trading System (SBCE) in the next 5 years.	Risk of carbon taxation. Although we have a predominantly renewable portfolio, with a commitment to be 100% renewable by 2030, we still operate a thermoelectric complex that produces energy from fossil fuel oil.	<p>We follow the formulation of public policies on carbon pricing and adopt the internal carbon price in the analysis of our operations. One of the initiatives we monitor is the PMR (Partnership for Market Readiness). The World Bank's initiative assesses the feasibility of implementing emission pricing instruments in countries.</p> <p>We prepare and audit the GHG inventory annually to monitor our emissions. We innovate to generate energy using the minimum amount of fuel needed.</p>
Technological	Existence of The Net Zero Assets Managers Initiative and Net Zero Banking Alliance, which aim to direct investments and financing in line with achieving the Net Zero goal by 2050.	Risk of not carrying out, at the appropriate pace, the innovations in solutions, processes and in the very way of doing business that the growing demand for low-carbon products and services requires.	In a systematic way, in the strategic planning process and through an area dedicated to innovation, we put into practice structuring projects, that is, long-term innovations focused on the future of the electricity sector, observing technology trends and new business models.
Market	Expansion of the consumer market in Distributed Generation since ANEEL regulation in 2012 and in the Free Energy Market as of 2024 with the expansion to small high voltage consumers.	Risk of loss of customers in the distribution segment due to the trend of energy consumption by the distributed generation system or the free energy market.	We track and monitor our customers' energy consumption. Through CPFL Soluções, we offer complete consulting so that the customer has better management of their energy and we support distributed generation, energy efficiency and migration projects to the free market.

Category	Trends	Risk	Management
Reputational	In 2022, 68% of leaders of large corporations reported being pressured by customers to position the company on the topic of climate change. The trend is for increased pressure from stakeholders to position companies in the transition to a low-carbon economy.	Risk of not properly managing the expectations of customers and society in general regarding the positive and negative impacts of the organization in the transition to the low-carbon economy.	We monitor a series of reputational indicators and are attentive to the demands and expectations of our stakeholders. We maintain consultation and dialogue channels, such as the materiality definition processes, the Investor Relations (IR) channels and the ANEEL Consumer Satisfaction Index (Iasc), of the National Electric Energy Agency (ANEEL).
Technological and regulatory	Trend of expansion of transmission lines in the Northeast region for flow due to the increasing deployment of renewable energy infrastructures (mainly solar and wind).	Risk of loss of competitiveness, if the company is unable to keep up with the expansion of transmission, expected to occur mainly in the Northeast.	We are continuously investing in transmission and positioning ourselves as one of the largest private broadcasters in the country. The CPFL Group's portfolio already included the transmitters CPFL Maracanaú, CPFL Morro Agudo and CPFL Piracicaba, and in 2022 we completed the integration of CPFL Transmission, the result of the CEEE-T privatization auction, with more than 6 thousand km of lines.
Reputational	In the scenario of warming of 3 °C, there is a tendency for a small variation in the variable of maximum precipitation in one day (RX1day), with a slightly higher intensity in the Midwest and South regions.	Risk of negative image impacts caused by interruptions in energy supply as a result of extreme weather events.	We invest in the continuous improvement of the network with initiatives that make the system more robust and secure. The main measures are grouped under the item Acute physical risks on the following pages
Reputational	In the scenario of warming of 3 °C, there is a tendency for Consecutive Dry Days (CDD) to worsen in the Midwest, Northeast and North regions.	Reputational risk associated with potential rationing caused by droughts.	We monitor a series of reputational indicators and are attentive to the demands and expectations of our stakeholders. We maintain consultation and dialogue channels, such as the materiality definition processes, the Investor Relations (IR) channels and the ANEEL Consumer Satisfaction Index (Iasc), of the National Electric Energy Agency (ANEEL).

Category	Trends	Risk	Management
Market	Changes in rainfall patterns observed in the historical series due to the increase in the Earth's temperature.	Risk of losses due to price volatility, which are associated with the hydrology of the SIN.	The Eurus540 R&D, which intends to forecast the wind for the Northeast with the highest accuracy in the market, will also bring a highly accurate rain forecast over Brazil, contributing to anticipate possible water frustrations. In addition, we are working on forecasting climate extremes, we use ONS models and other renowned models in the market, and we have the support of consultancies in the study of meteorological scenarios, especially when evaluating hydrological scenarios. In the axis of reducing the exposure of the generation portfolio to price volatility, we renegotiated the hydrological risk and took strategies such as hedging, seasonalization of purchase and sale contracts and the physical guarantee of the plants, coverage of exposures, mapping of suppliers that can provide additional biomass and the diversification of the portfolio itself.
		Risk of reduced ability to predict the operation, due to changes in future weather patterns, impairing decision-making.	The Eurus540 R&D, which intends to forecast the wind for the Northeast with the highest accuracy in the market, will also bring a highly accurate rain forecast over Brazil, contributing to anticipate possible water frustrations. We also work with wind projections using machine learning. In addition, we are working on forecasting climate extremes, using ONS models and other renowned models in the market, and we are continuously improving our internal generation prediction processes, using models to better accurately study the variations between projection and realization. In addition, we renegotiated the hydrological risk and took other measures to mitigate risks in generation.

Category	Trends	Risk	Management
Regulatory	In a 3 °C warming scenario, there is a tendency for a reduction in standard rainfall in the North, Northeast, Midwest, and Southeast regions.	Risk of reduced predictability in the operation of the SIN as a whole, bringing in new regulations, impacts on the market and the dispatch of power plants.	We actively participate in associations and debates within regulatory spheres, enabling us to stay informed about new regulations and to take adaptive actions in advance. We also engage in discussion forums related to improvements and changes in the computational models of the electricity sector.

Physical cliffs

Category	Threat	Trends	Risk	Management
Chronic	Sea level rise	In the 3°C warming scenario, there is a trend of sea level rise between 0.6 and 1.0m by 2100, compared to 1995 - 2014 levels.	Risk of sea level rise, which may affect plants located in a coastal region.	We monitor coastal conditions and the risks to plants with the highest probability of exposure, in order to anticipate potential coastal erosion.
Acute	Water scarcity	In the scenario of warming of 3 °C, there is a tendency for Consecutive Dry Days (CDD) to worsen in the Midwest, Northeast and North regions.	Risk of dispute over the use of water from the reservoirs caused by the change in the rainfall regime.	We are part of Basin Committees for the collective construction of solutions for the multiple uses of water. In addition, we are working on forecasts of climate extremes, in the horizon of 9 months ahead, enabling the planning of preventive actions.

Category	Threat	Trends	Risk	Management
Acute	Heavy rains	In the scenario of warming of 3 °C, there is a tendency for a small variation in the variable of maximum precipitation in one day (RX1day), with a slightly higher intensity in the Midwest and South regions.	Safety risk due to drastic increase in volume in reservoirs or dams.	<p>We used the Dam Safety Management System (SGSB) and launched the Hydro 4.0 platform in 2023, focusing on dam instrumentation and real-time monitoring of structures, as well as flow, level, among other variables.</p> <p>We implemented the Integrated Operations Center (IOC) and adopted predictive actions and machine learning tools that help anticipate risks of equipment failures. We carry out research and development projects, such as the use of ultrasound to identify anomalies, drone inspections, among others.</p>
Acute	Change in wind speed	In the scenario of warming of 3 °C, there is a tendency for the intensification of the wind speed on the surface, reaching 10% in all Brazilian regions, occurring more intensely in the South region and less intense in the Northeast region.	Risk of wind generation instability due to a change in wind intensity, making the operation unfeasible (too strong or insufficient wind).	<p>Our generation portfolio involves different energy sources and geographic locations, which reduces the overall risk to the business, since the phenomena will not be uniform.</p> <p>In the generation sector, we invested in efficiency gains, implemented the Integrated Operations Center (IOC), and adopted predictive actions and machine learning tools that help anticipate risks of equipment failures.</p> <p>In addition, we currently have the Eurus540 R&D, which intends to forecast the wind for the NE in the 18-month horizon, with the highest accuracy in the market.</p>

Category	Threat	Trends	Risk	Management
Acute	Water scarcity	In the scenario of warming of 3 °C, there is a tendency for Consecutive Dry Days (CDD) to worsen in the Midwest, Northeast and North regions.	Risk of reduced biomass generation caused by changes in precipitation and temperature patterns, affecting agricultural cultivation conditions and, consequently, the volume of biomass available to produce energy.	<p>Our generation portfolio involves different energy sources and geographic locations, which reduces the overall risk to the business, since the phenomena will not be uniform. In the generation sector, we invested in efficiency gains, implemented the Integrated Operations Center (IOC), and adopted predictive actions and machine learning tools that help anticipate risks of equipment failures.</p> <p>The Eurus540 P&D, which intends to forecast the wind for the NE with the highest accuracy in the market, will also bring a highly accurate rain forecast over Brazil, contributing to anticipate possible water frustrations in the growing regions. In addition, we map suppliers that can provide additional biomass if necessary, and apply risk management measures from the point of view of energy trading, aiming to mitigate potential losses to the plants.</p>
			Risk of decreased availability of hydroelectric plants and consequent need to purchase energy to cover the contracted volumes, generating extra costs.	<p>We renegotiated the hydrological risk of the operation, measured by the Generating Scaling Factor. The GSF measures the relationship between the volume of energy generated by the plants and their physical guarantee. Other actions already described: portfolio diversification, efficiency measures and use of technology.</p>
Acute	Heat waves	In the scenario of warming of 3 °C, there is a worsening trend in the maximum temperature indicator (TX), with greater intensity in the Midwest and Southeast regions.	Risk of overloading the system due to extreme variation in consumption due to long periods of heat.	<p>We invest in the security and reliability of the network, with actions to expand, automate and modernize equipment.</p> <p>In addition, the prediction of temperature extremes can help in the company's strategic planning in the face of this risk.</p>

Category	Threat	Trends	Risk	Management
Acute	Extreme weather events	In the scenario of warming of 3 °C, there is a tendency for a small variation in the variable of maximum precipitation on five consecutive days (RX5day), with a slightly higher intensity in the Midwest and South regions. The occurrence of these events can lead to flooding and landslides.	Risk of maintenance costs and damage to facilities due to extreme weather events.	<p>Our predictive systems assist in the allocation and dispatch of field teams to the most vulnerable locations, speeding up supply restoration and reducing operational costs.</p> <p>We invest in a robust and secure network, with technologies that minimize the impact, frequency, and duration of outages and make it more agile to restore supply. Among the initiatives, the following stand out:</p> <ul style="list-style-type: none">• telemetering;• urban afforestation projects;• Implementation of the Advanced Distribution Management System (ADMS) platform, which integrates a wide database and monitors assets with more agility and efficiency. <p>Here the WETS project can collaborate a lot with the predictive planning of these losses</p>
			Risk of generating extra expenses for reimbursement to customers in the event of damage to their electrical appliances.	
Chronic	Increase in average temperature	In the scenario of warming of 3 °C, there is a warming trend in all Brazilian regions, with greater intensity in the Midwest and Sudest regions.	Risk of efficiency loss due to the increase in temperature, affecting solar plants and transmission and distribution lines.	The prediction of temperature extremes can help in the company's strategic planning in the face of this risk. In addition, in the generation sector, we invest in efficiency gains and adopt predictive actions that help anticipate risks of equipment failures.

Opportunities in the decarbonization of economies

Efforts to decarbonize economies, sought as a way to mitigate GHG emissions, require new services, products, and forms of market operation that are less carbon-intensive.

The CPFL Energia group also proposes to position itself as an important player in meeting the needs of low-carbon economies.

Opportunity	Taxonomy	Management
Opportunity to position CPFL as a relevant player in the strengthening of an electricity matrix less dependent on fossil fuels.	Source of energy	<p>We have teams dedicated to identifying opportunities for acquisitions and the development of new projects. CPFL Renováveis has already mapped initiatives with the potential to add 4.8 GW to the installed capacity.</p> <p>In 2021, we completed the construction of the four wind farms of the Gameleira Complex with an installed capacity of 81.65 MW (megawatts). The new Cherobim SHP generating unit with an installed capacity of 28 MW is also under construction. CPFL Solutions' portfolio of products and services (see page 10).</p>
Opportunity to explore ancillary and flexibility services, the need for which must grow to guarantee energy security, following the greater insertion of renewable sources in the energy matrix.	Source of energy	<p>We participate in discussion forums and R&D projects with other entities in the sector addressing these topics. As an example, it is possible to mention the R&D project on the feasibility of inserting pumped storage plants in the SIN, carried out in partnership with the Federal University of Rio de Janeiro (UFRJ) and other companies in the private sector.</p> <p>We have teams dedicated to identifying opportunities for acquisitions and the development of new projects.</p> <p>Our hydroelectric power plants (HPPs) are currently remunerated for ancillary services of voltage and frequency control.</p>
Opportunity to explore new generation technologies and energy sources that are not yet in the portfolio and can be boosted with the objective of decarbonizing economies. Ex. hydrogen, solar thermal, among others.	Products and services	<p>Today, in our 2030 ESG Plan, we have a commitment aimed at investing in green hydrogen.</p> <p>We have teams dedicated to identifying opportunities for acquisitions and the development of new projects, such as hybrid plants, offshore wind, among others, for the purpose of developing new projects and acquisitions.</p>
Opportunity to expand energy efficiency services.	Markets	<p>We offer energy efficiency solutions to optimize customers' electricity consumption.</p> <p>We responsibly apply the resources of ANEEL's Energy Efficiency Program, seeking to benefit the communities in which we operate.</p>

Opportunity	Taxonomy	Management
Opportunity to explore eco-efficiency practices and technologies in CPFL's operations, developing innovative actions and processes and allowing cost reductions.	Resource efficiency	<p>We currently have a pillar focused on eco-efficiency in our 2030 ESG Plan, with commitments that are monitored and operationalized in partnership with various areas of the company. Such actions include waste reduction, efficiency in the use of energy and water at the company's facilities, and promotion of circularity through reverse logistics and recycling.</p> <p>In addition to the actions mentioned, we highlight the Reformer of CPFL Soluções, responsible for carrying out the refurbishment of transformers, avoiding their disposal. We also reuse waste from poles.</p>
Growth opportunity in distribution due to increased demand for electricity to adapt to climate change.	Markets	We invest in expanding and strengthening networks, and expand the use of smart and connected grid technologies.
CPFL Solutions' growth opportunity due to increased demand for low-carbon products.	Markets	With expertise and customized projects, we support our clients in the transition to low-carbon production, strengthening relationships in the present and consolidating, for the future, a leading position as preferred partners in this process.
Opportunity to develop and implement new adaptation practices and technologies.	Resilience	<p>We invest in actions to improve the resilience of our areas of activity to climate change. Among the ongoing initiatives, we highlight:</p> <ul style="list-style-type: none"> - Reinforcement of the robustness and security of the network, with technologies that minimize the impact, frequency and duration of interruptions and make the restoration of supply more agile, involving urban afforestation projects, telemetering and implementation of the Advanced Distribution Management System (ADMS) platform, which integrates a wide database and monitors assets with more agility and efficiency; - Eurus540 R&D, with the intention of improving the accuracy of the wind forecast for the NE and the rain forecast; - Investment in dam safety with the Dam Safety Management System (SGSB) and the Hydro 4.0 platform, focusing on dam instrumentation and real-time monitoring of structures.

Opportunity	Taxonomy	Management
Opportunity to offer carbon credits (certificates issued for projects to reduce GHG emissions) in the regulated market (Clean Development Mechanisms – CDM/ Sustainable Development Mechanism – MDS) and in the voluntary market (Verra).	Products and services	We offer companies the possibility of fully offsetting emissions from scopes 1 (direct), 2 (indirect generated in energy consumption) and 3 (value chain). We invest in the registration, revalidation and verification of carbon credit-emitting projects. There are already 11 projects registered in the regulated and voluntary carbon market, with the potential to neutralize 26 million tons of GHG.
Opportunity to offer renewable energy certificates (I-REC – International Renewable Energy Certificates).	Products and services	We carry out both the registration of generation plants for the issuance of RECs and the registration of CPFL Soluções for the sale of certificates, increasing the agility in the process and availability of renewable energy seals in our portfolio. Considering our generation portfolio, we have an estimated capacity to issue 1.3 million RECs per year.
Market opportunity due to the demand for new electric mobility technologies.	Products and services	<p>We have identified electric mobility as one of the biggest windows for innovation in the industry and have invested in research and development to anticipate the demands arising from the advancement of this technology. One of the commitments of the 2030 ESG Plan is the electrification of 15% of the operational technical fleet by 2030</p> <p>Some projects in progress are:</p> <p>Intelligent Electromobility Platform: integrates different charging infrastructures to offer more flexibility to the user.</p> <p>Sustainable Charging Station: strengthens integration based on the concept of smart cities.</p> <p>Second Life of Electric Vehicle Batteries: development of technology to recombine used battery cells, which can compose new batteries applicable in different scenarios.</p> <p>Electric Bus: Living laboratory of electric mobility for public transport at the University of Campinas (Unicamp), with circular operation, integration of electric stations and real-time connectivity.</p> <p>In 2022, we completed the electrification of the entire operational fleet in Indaiatuba (SP), with an investment of R\$ 2.8 million.</p>



Metrics, targets and initiatives

Message from the leadership	Who we are	ESG in strategy	Climate and the electricity sector	Climate risks	Goals and metrics	Actions and initiatives	Engagement and transparency
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Metrics, targets and initiatives

Identifying and measuring one's own impact is the first step towards a climate strategy.

At CPFL, the GHG Emissions Inventory has been carried out since 2009. In 2011, we joined the Brazilian GHG Protocol Program and, since then, we have obtained the Gold seal, granted to complete reports verified by a third-party body accredited by the National Institute of Metrology, Quality and Technology (Inmetro). To give even more visibility to the inherent characteristics of the

Group's various operations, we measure and disclose the contribution of each business segment (generation, transmission, distribution and solutions) in the three scopes of the inventory.

In addition to monitoring the evolution of emissions, year by year, we monitor three indicators of emissions intensity: by energy generated, by energy distributed, and by net operating revenue.

With our commitment to engage the value chain for a low-carbon economy, we have expanded our scope 3. This review work evaluated the 15 categories of this scope, resulting in 8 categories applicable to our business.

Emissions report

Our inventory provides qualified information on our GHG emissions, segmented by scope, emission source and business segment.

Over time, we refined our emission factors in order to achieve greater inventory accuracy. In this way, we direct our efforts to measures with

greater potential impact of reducing emissions.

Our inventory data is public and can be consulted in detail on the website registropublicodeemissoes.fgv.br

The information is also disclosed in the integrated reports, published annually.



Our results

Scope 1

Direct emissions owned or controlled by the company.

Example: stationary combustion for the generation of energy through thermal and biomass sources and its own fleet of vehicles.

GHG emissions from the generation of electricity from our Thermoelectric Power Plant (Epasa) represent an average of 87% of our stationary combustion emissions and almost 33% of the total emissions of the CPFL Group in 2021.

However, in 2023, dispatch corresponded to 17% of stationary combustion emissions and 2% of total emissions.

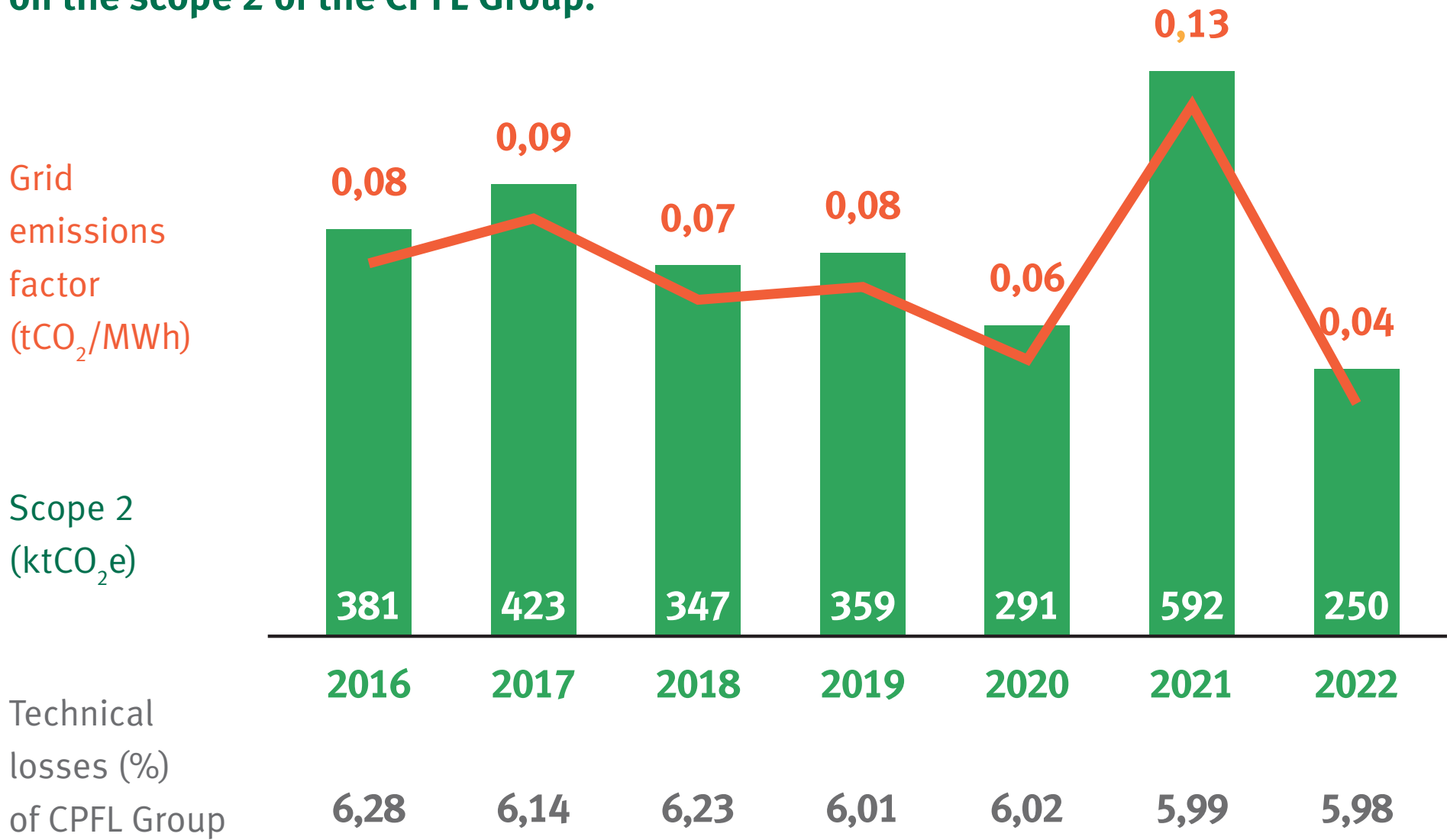
Epasa, despite being an asset of CPFL, is dispatched centrally. This means that its generation is triggered by the National System Operator (ONS), whose decision is dependent on several factors related to the balance between energy supply and demand in the SIN, such as the availability of other plants, mainly hydroelectric plants, the load, among others.

Scope 2

Indirect emissions related to the purchase of electricity and technical losses from energy distribution and transmission.

Our scope 2 is mainly composed of technical losses in distribution, consequently having a direct impact on the National Interconnected System (SIN) factor, which is a function of aspects such as hydrological regime, dispatch of thermoelectric plants and energy demand in the SIN, such as: the availability of other plants, especially hydroelectric plants, the load, among others.

Influence of the network's emissions factor on the scope 2 of the CPFL Group.



Our results

Scope 3

Indirect emissions related to the value chain.

Example: travel, purchase of materials, displacement of employees, waste generated in operations, etc.

Our scope 3 was expanded, about which we evaluated 15 categories, resulting in 8 categories applicable to our business.

The graphs on the following page show the results of 2023 and 2021, in this case, the baseline for the decarbonization goals.

Through them, it is possible to observe the total emissions,

in addition to the absolute and percentage contribution of each scope, as well as their respective breakdowns.

We can see that there was a significant decrease in emissions, with the main contributions being the Epasa dispatch and the grid emission factor, observed in the item of losses in transmission and distribution, energy purchased, energy sold by trading and upstream final products.

However, we had an increase in emissions due to the suppression of vegetation, due to the construction work of the SHP Cherobim

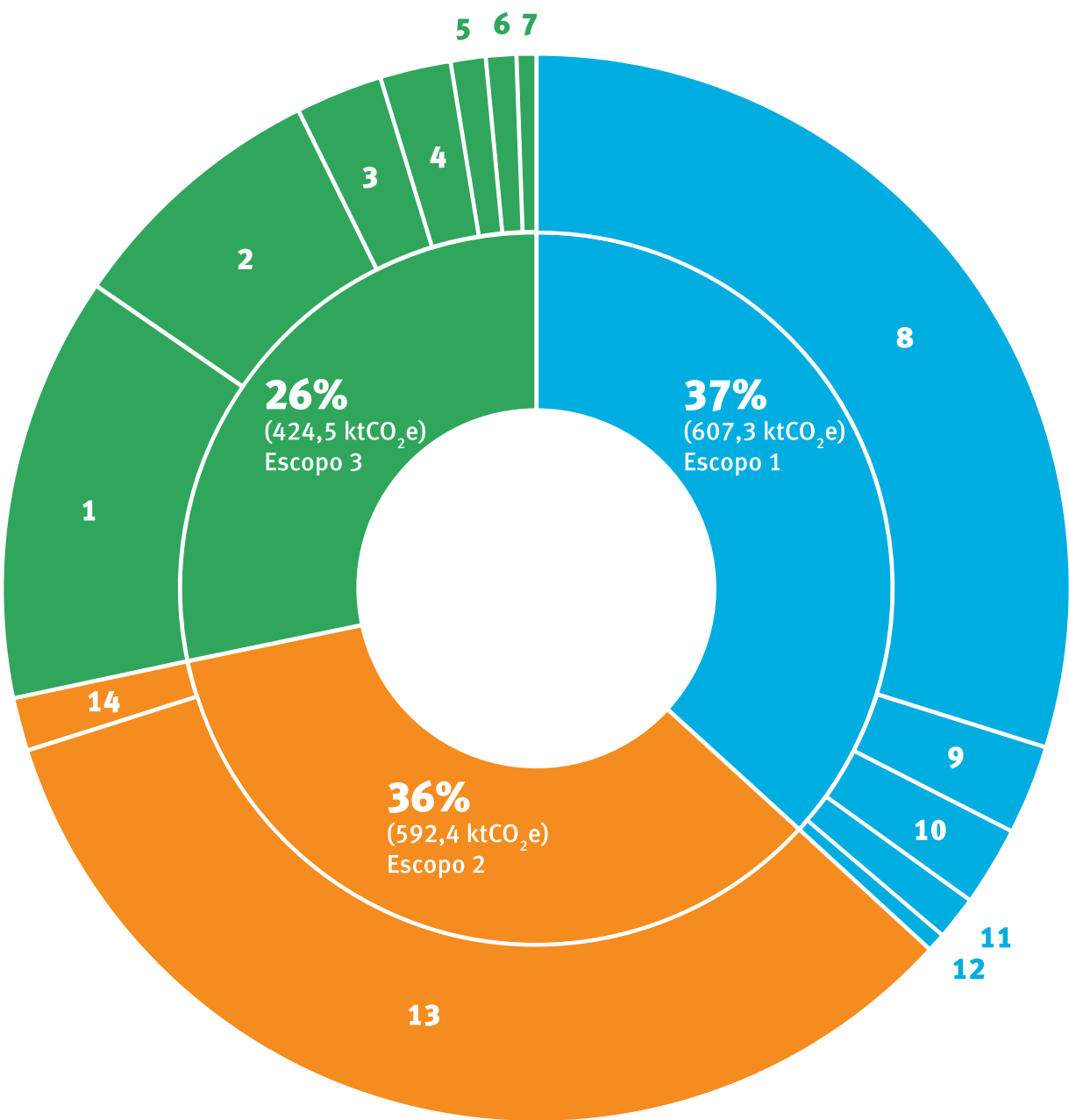


Our results

GHG Inventory 2021

Our baseline

Total emissions
1.624,2 (ktCO₂e)



1 14% (231,7 v)
Upstream end products

2 10% (156,4 ktCO₂e)
Energy sold by trading and fuels purchased

3 2% (26,5 ktCO₂e)
Upstream intermediate materials

4 1% (9,3 ktCO₂e)
Waste disposal

5 <0,1% (0,3 ktCO₂)
Air travel

6 <0,1% (0,2 ktCO₂)
Upstream transport

7 <0,1% (0,09 ktCO₂)
Employee commuting

8 34% (555,2 ktCO₂e)
Power generation

9 2% (28,3 ktCO₂e)
Fleet

10 1% (22,2 ktCO₂e)
Vegetation suppression

11 0,1% (1,6 ktCO₂e)
Air conditioning and fire extinguisher

12 <0,1% (0,01 ktCO₂)
Waste disposal

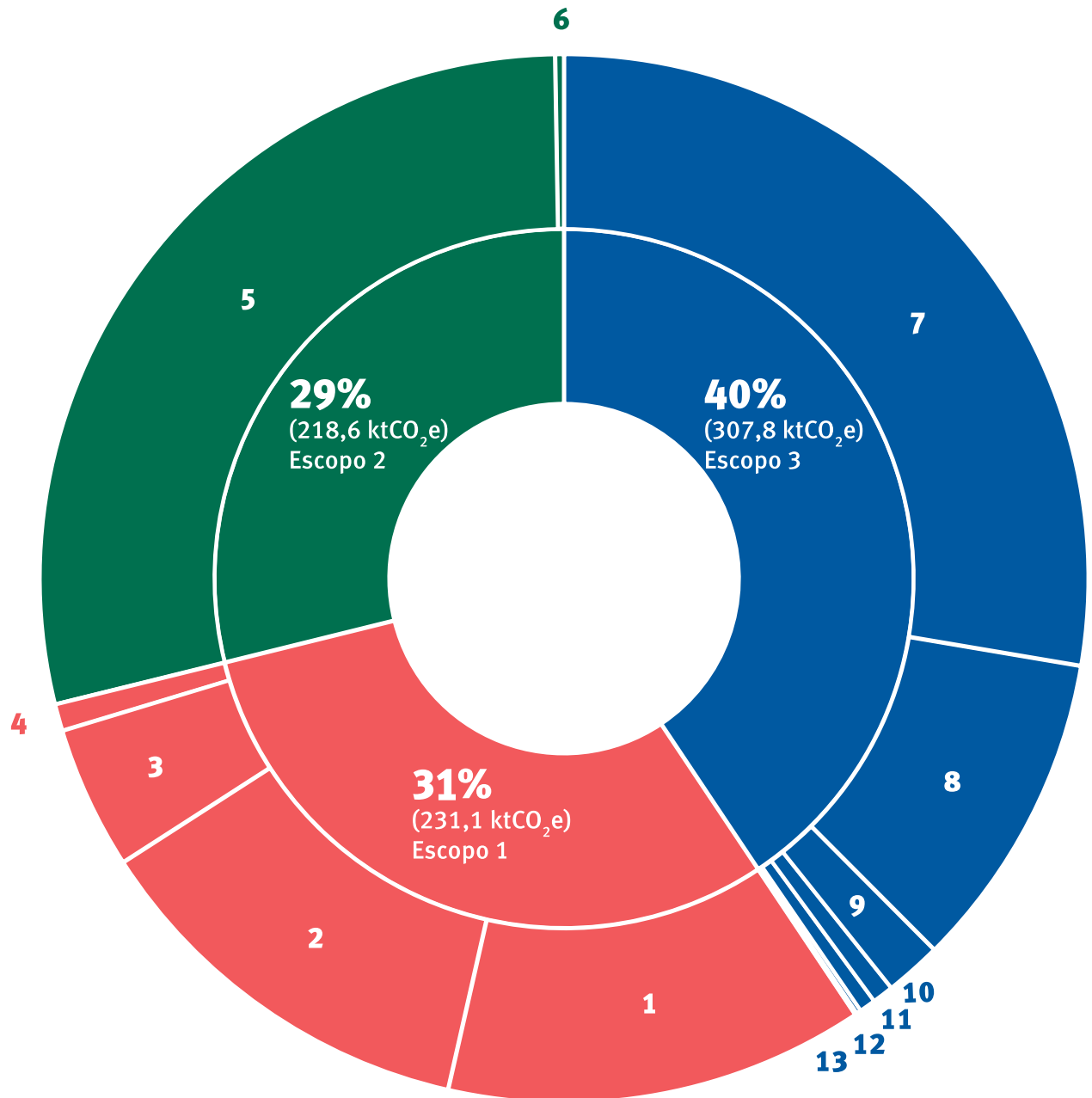
13 36% (585,9 ktCO₂e)
T&D network losses

14 0,4% (6,4 ktCO₂e)
Power consumption

GHG Inventory 2023

Our latest results

Total emissions
757,5 (ktCO₂e)



1 13% (97,9 ktCO₂e)
Vegetation suppression

2 12% (93,5 ktCO₂e)
Power generation

3 4% (33,4 ktCO₂e)
Fleet

4 1% (6,3 ktCO₂e)
Air conditioning and fire extinguisher

5 29% (216,6 ktCO₂e)
T&D network losses

6 0,3% (2,1 ktCO₂e)
Energy consumption

7 28% (209,6 ktCO₂e)
Upstream products

8 10% (74,7 ktCO₂e)
Energy sold through trading and purchased fuels

9 2% (13,2 ktCO₂e)
Upstream intermediate materials

10 0,7% (5 ktCO₂)
Employee commuting

11 0,5% (3,8 ktCO₂e)
Waste disposal

12 0,1% (1,1 ktCO₂)
Air travel

13 <0,1% (0,5 ktCO₂)
Upstream transport



Actions and initiatives

Roadmap

Summary of CPFL's action plan for decarbonization.

The journey so far

Mitigation

96% of the portfolio comes from renewable sources

~60-thousand network equipment has been refurbished since 2017

R\$ 58 million invested in electric mobility technologies since 2007

R\$ 265 million invested in energy efficiency in public hospitals since 2019

Adaptation

R\$ 360 million invested in automation of the distribution network since 2020

100% of group A customers served by telemetering since 2020 and an average of 89% of services performed digitally in the last 5 years

We publish CPFL Energia's actions for adaptation

Value chain engagement

On average, 88% of critical suppliers assessed on sustainability criteria since 2021

60% of supplier spending on advanced sustainability practices in 2023

On average 99% of key network components destined for recycling or reverse chain systems since 2020

We provide our customers with low-carbon solutions

Where we want to go

Be carbon neutral from 2025 by reducing emissions by 56% by 2030, compared to 2021

Mitigation

Generate 100% renewable energy by 2030

Achieve at least 15% electrification of the Technical Operational Fleet

Refurbish at least 70,000 pieces of equipment by 2030

Invest at least R\$ 40 million in green hydrogen technologies by 2030

Promote eco-efficiency in operations by reducing waste production and water and energy use

Expand the capacity to mitigate impacts of operations on biodiversity

Adaptation

Consolidate a robust climate risk management strategy aimed at the long-term security of operations

Reach at least R\$ 580 million in investments in smart solutions by 2027

Improve the Arborização + Segura project by investing R\$ 30 million by 2030

Expand solutions that help anticipate extreme weather events and improve our ability to predict

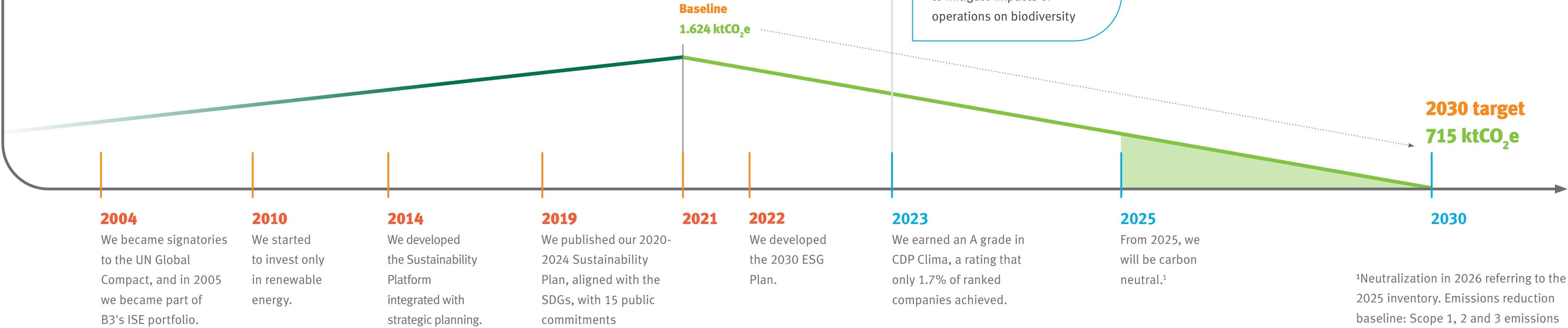
Value chain engagement

Evaluate 100% of critical suppliers on sustainability criteria

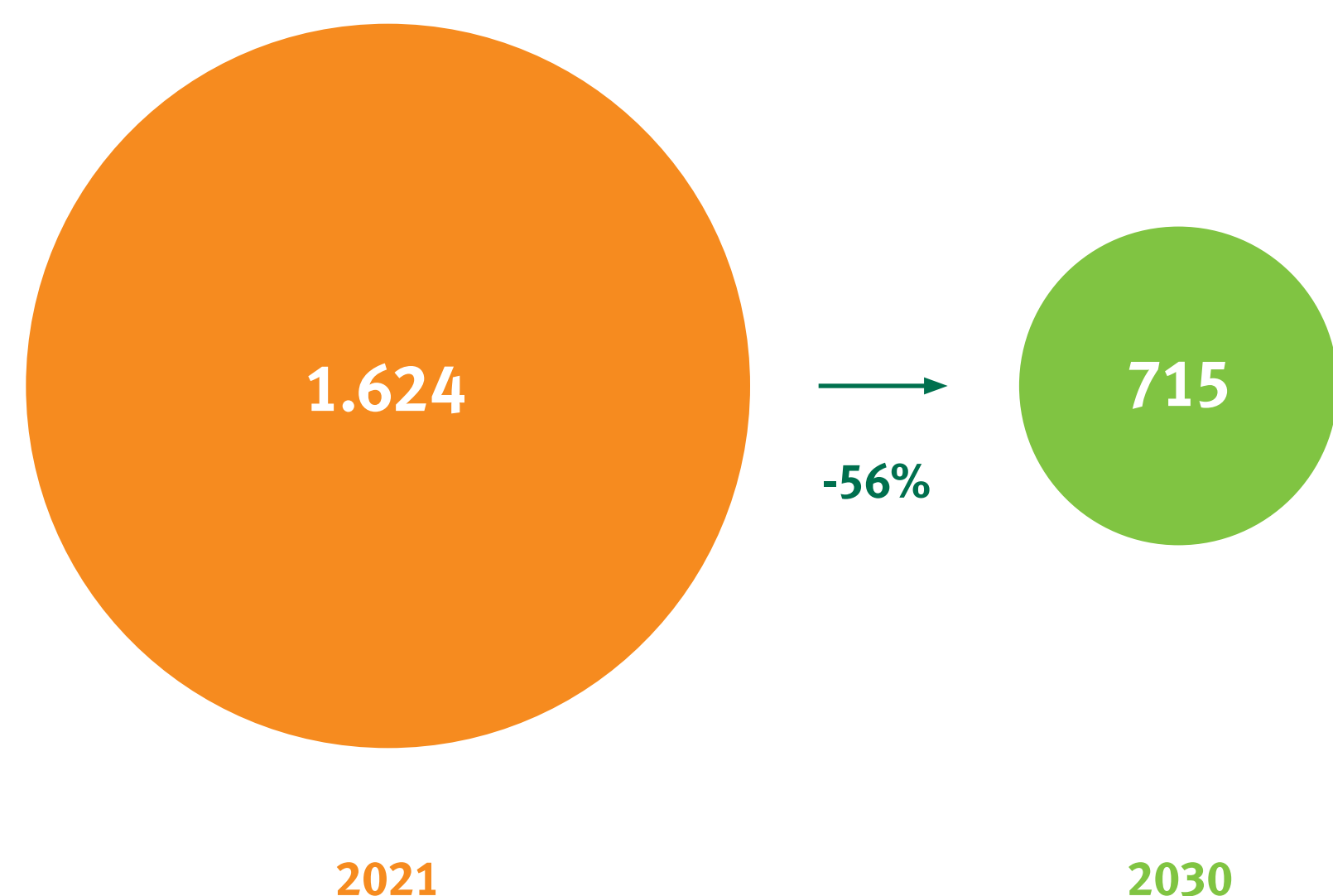
Achieve at least 85% of spending with companies that have advanced sustainability practices by 2030

Offer low-carbon solutions (I-RECs, carbon credits)

Offer low-carbon solutions (I-RECs, carbon credits)



CPFL Group's commitment to reduce emissions (ktCO₂e) by 2030, compared to 2021 (baseline).



Mitigation

Contextualization

Reducing GHG emissions is a priority for CPFL Energia. Even with the predominance of renewable sources in the Brazilian energy matrix, it is essential to move towards a low-carbon scenario in the electricity sector, considering its importance for economic development and the relevance of thermoelectric plants in the country.

In the 2030 ESG Plan, CPFL has set the ambitious goal of becoming carbon neutral as of 2025, reducing our emissions as much as possible and compensating only for what we cannot mitigate (Scopes 1, 2 and 3). To this end, we plan to generate 100% of our energy from renewable sources and reduce our total emissions by 56%.

To achieve these goals, we are implementing several actions in our operations, as well as offering low-carbon solutions to our customers and the communities they serve.

Energy efficiency projects are also being developed and partnerships with suppliers are established to promote sustainable development. These initiatives make it possible to reduce emissions from other productive sectors, strengthening our strategy in the face of mitigating the impacts resulting from climate change.

It is important to note that our 2030 ESG Plan undergoes an annual review process, always aiming to improve mitigation measures. In addition, we have the possibility of using IRECs as a guarantee to achieve the 56% reduction target.

The search for a more sustainable future is a challenge that demands continuous efforts and concrete actions. CPFL Energia reaffirms its commitment to reducing emissions and transitioning to a more sustainable energy model, thus contributing to the construction of a future with lower environmental and climate impacts.

Mitigation

Key initiatives

1

Towards 100% renewable energy generation.

Currently, 96% of our power generation portfolio comes from renewable sources. With the goal of reaching the mark of 100% energy generation from renewable sources, we plan to close the operations of our Epasa thermoelectric plant by 2030.

2

Reduction in losses in the distribution network.

We have been successful in reducing technical losses, standing out as a market leader in this regard. Despite this, we face challenges in mitigating GHG emissions associated with these losses, mainly due to the dependence on the emission factor of the National Interconnected System. We recognize the importance of overcoming these challenges and are committed to finding effective solutions to reduce technical losses.

3

Low-carbon solutions.

We seek to be our customers' preferred partner in the energy transition, with projects for self-production of energy from renewable sources and the commercialization of incentivized energy. In addition, our consultancy covers solutions for neutralizing and offsetting emissions, providing carbon credits and IRECs.

4

Supply chain.

We reiterate our commitment to the supply chain, elevating our mission to collaborate closely with our business partners towards a low-carbon economy.

5

Electrification of the vehicle fleet.

For more than a decade, we have been leading initiatives aimed at electrification in our vehicle fleet. Our goal is to electrify at least 15% of the distributors' operational technical fleet by 2030.

6

Circular economy and Eco-efficiency.

Since 2017, we have been dedicated to the revitalization of our network equipment (transformers, voltage regulators, reclosers, etc.). At the same time, we promote eco-efficiency in our buildings. In addition to conscious energy consumption, we encourage the responsible use of water and the reduction of waste disposal to landfills.

7

Investing in green hydrogen.

The transition to a low-carbon economy requires the promotion of significant innovations in the way we produce and consume energy. In this sense, we firmly believe that investment in new technologies represents one of the most promising solutions to drive this energy transition.

8

Enhance net positive impact on biodiversity.

We commit to environmental agencies and communities to carry out forest replenishment and conservation operations, preserve habitats and avoid interference with properties. In addition, we are committed to maintaining the entire affected area until ecological processes ensure its natural succession, as a way of repairing and mitigating impacts in the medium and long term.

Our commitments

Towards a 100% renewable energy matrix

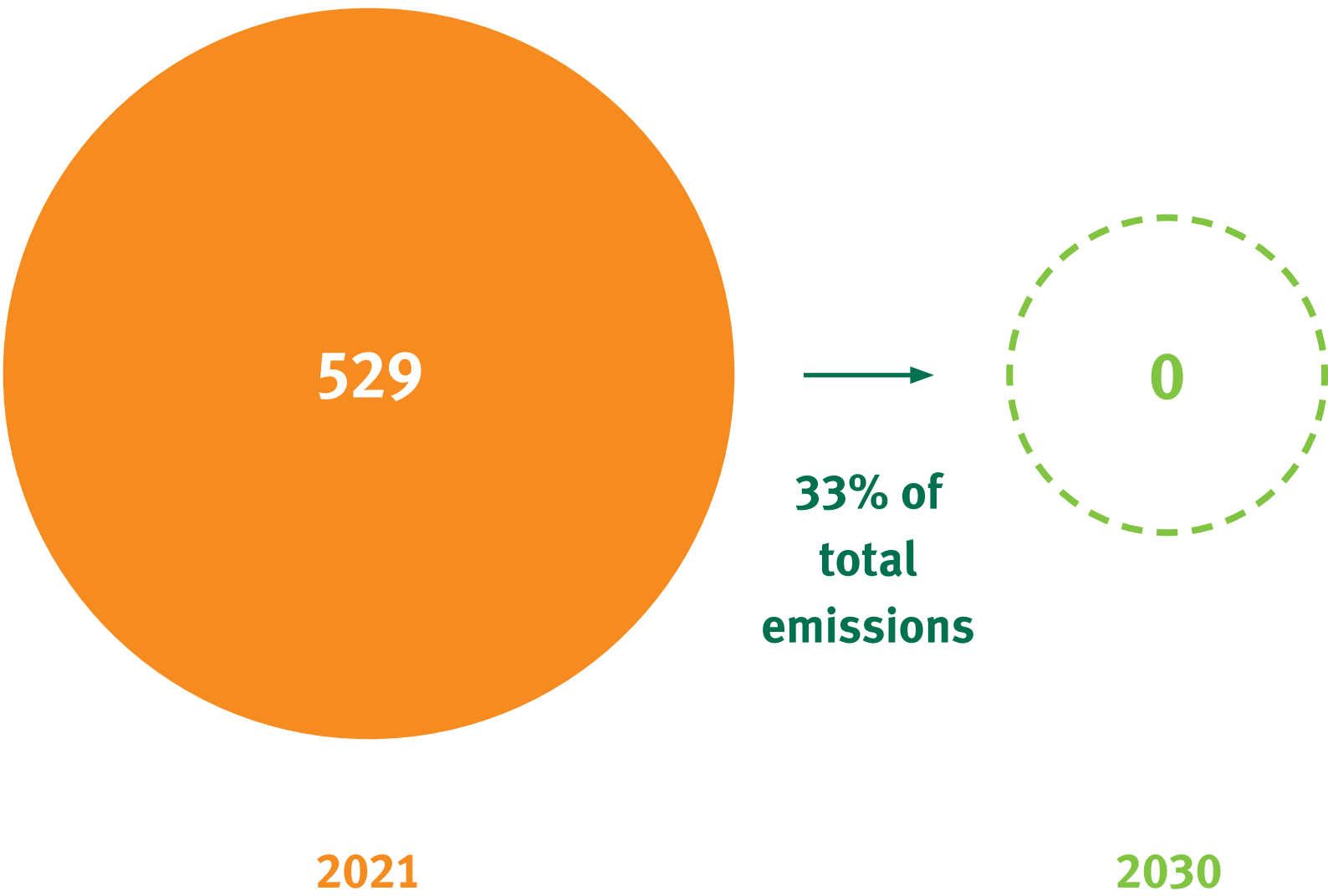
Since CPFL Energia's operations have a direct impact on the environment, our corporate strategy is aimed at strengthening renewable sources in the national energy matrix, contributing to the reduction of the use of fossil fuels and, consequently, greenhouse gas emissions.

Therefore, as one of the main negotiations on this front, we focused our efforts on the expansion of energy

generating parks from renewable sources, which have several benefits to the population.

Since 2010, the Company's policy has been to invest only in renewable generation sources, guided by the work of CPFL Renováveis. We have a pipeline of greenfield projects and acquisitions, including R&Ds, which already total 4,805 MW.

Reduction of emissions (ktCO₂e), due to the 100% renewable generation portfolio by 2030, compared to 2021.



*Emissions and reductions from the Epasa thermoelectric plant, covering Scope 1 (power generation, mobile sources, fugitives and waste) and Scope 3 (goods and services, employee displacement, waste generated, air travel, and activities related to fuels and energy not accounted for in scope 1).

Our commitments

Towards a 100% renewable energy matrix

However, there are still challenges to overcome. In 2021, GHG emissions from the generation of electricity from the Thermoelectric Power Plant (EPASA) represented an average of 80% of our scope 1 emissions and almost 30% of total emissions. Although the dispatch of this plant is controlled by the National System Operator (ONS), in accordance with the hydroelectric conditions of the National Interconnected System (SIN), we are responsible for its maintenance and availability.

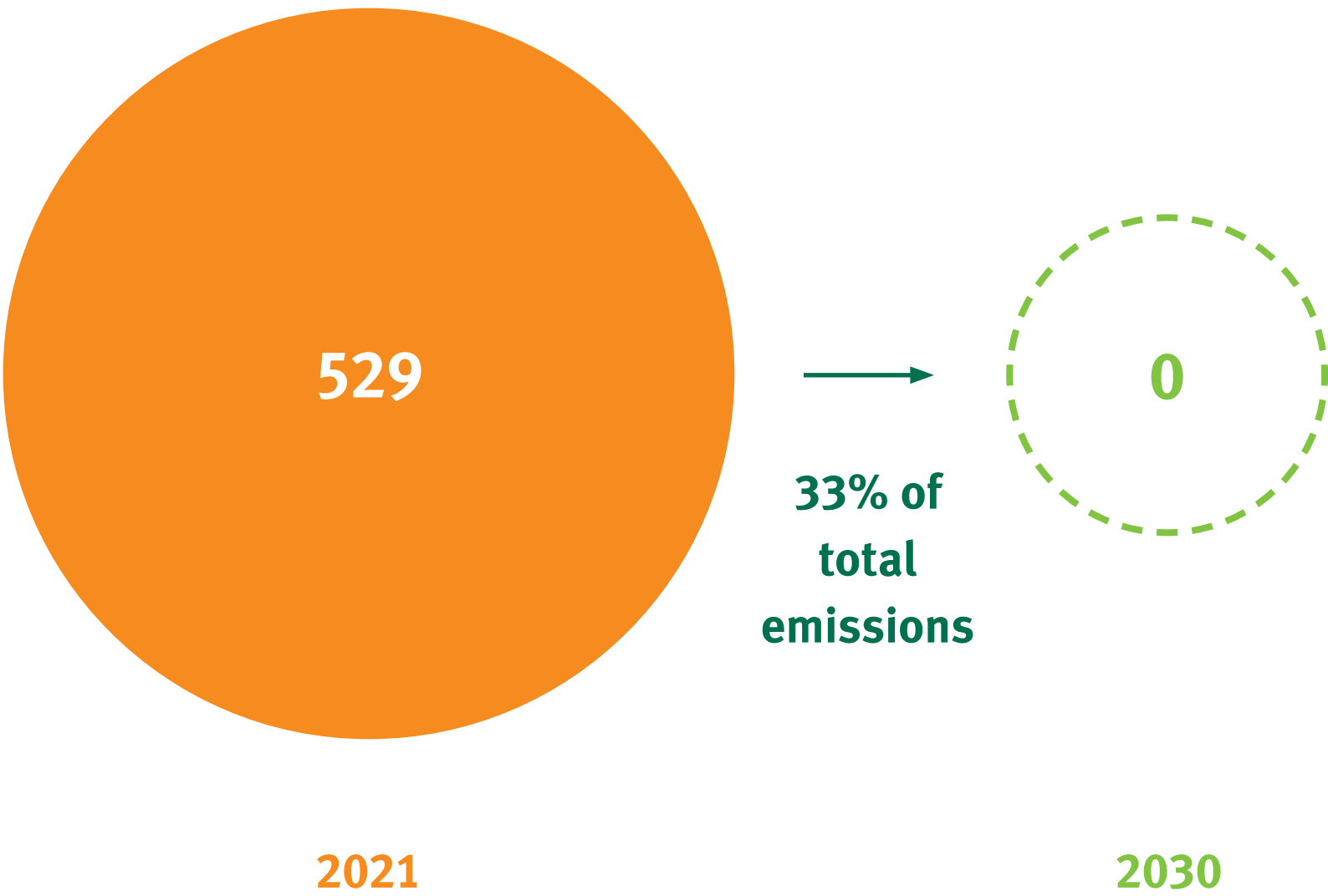
Given this scenario, we reaffirm our commitment to contribute to the

reduction of the use of fossil fuels and, consequently, GHG emissions. With this in mind, we have set ourselves the goal of achieving 100% energy from renewable sources by 2030.

To achieve this goal, we plan to end the operation of our Epasa thermoelectric plant by 2030, aiming to completely eliminate the use of fossil fuels.

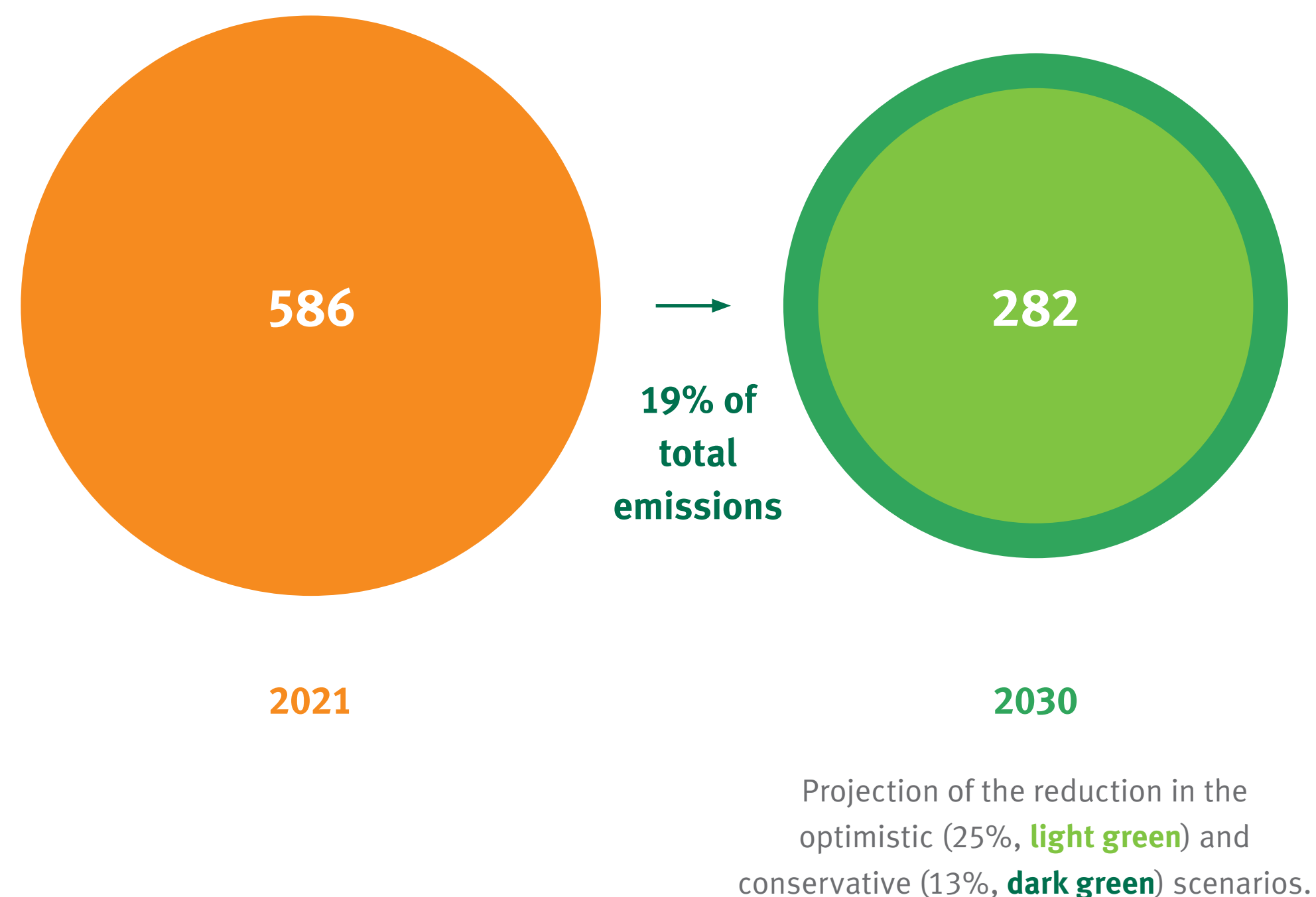
96% of our electricity generation portfolio comes from renewable sources.

Reduction of emissions (ktCO₂e), due to the 100% renewable generation portfolio by 2030, compared to 2021.



*Emissions and reductions from the Epasa thermoelectric plant, covering Scope 1 (power generation, mobile sources, fugitives and waste) and Scope 3 (goods and services, employee displacement, waste generated, air travel, and activities related to fuels and energy not accounted for in scope 1).

Reduction of emissions due to technical losses (ktCO₂e) by 2030, compared to 2021 (baseline).



The challenge of managing GHG emissions from losses in the distribution network materializes when we identify the influence of the rainfall regime. However, even though we have this unknown, positive perspectives arise with the projection of replacement of more polluting thermoelectric plants, such as those powered by oil and coal, by natural gas, as well as the growth in the share of renewable energy (e.g., solar and wind) in the installed capacity of energy generation in Brazil. These measures have the potential to reduce GHG emissions associated with losses in the distribution network, due to the possible decrease in the emission factor of the SIN.

Our commitments

Reduction in losses in the distribution network

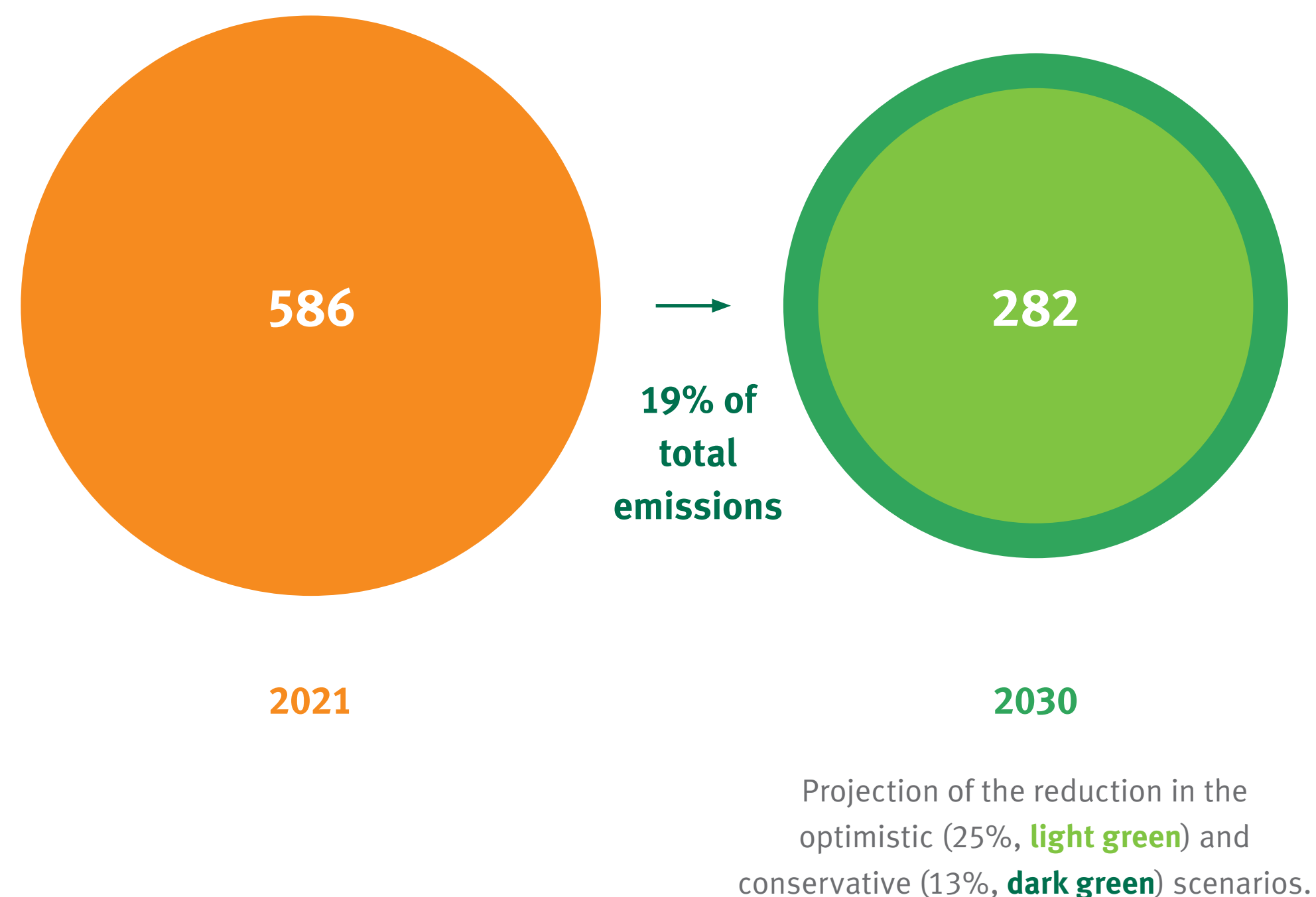
We have stood out with the best technical loss rates in the market, with a significant improvement from 2020 onwards, compared to previous years. These advances were possible thanks to the implementation of a loss reduction plan.

Despite the progress, GHG emissions from technical losses still accounted for a significant portion of the CPFL Group's total emissions in 2021.

However, in 2022 and 2023, we observed a significant drop, directly impacted by the emission factor of the National Interconnected System (SIN).

The year 2021 was challenging for the electricity sector with a shortage of rainfall that directly impacted the generation capacity of hydroelectric plants, due to an affluent natural energy (ENA) of only 52% of the long-term average.

Reduction of emissions due to technical losses (ktCO₂e) by 2030, compared to 2021 (baseline).



The challenge of managing GHG emissions from losses in the distribution network materializes when we identify the influence of the rainfall regime. However, even though we have this unknown, positive perspectives arise with the projection of replacement of more polluting thermoelectric plants, such as those powered by oil and coal, by natural gas, as well as the growth in the share of renewable energy (e.g., solar and wind) in the installed capacity of energy generation in Brazil. These measures have the potential to reduce GHG emissions associated with losses in the distribution network, due to the possible decrease in the emission factor of the SIN.

Our commitments

Reduction in losses in the distribution network

As a result, there was an increase in the supply of other energy sources, in particular the activation of thermoelectric plants to meet national demand. This change in the energy generation profile had a direct impact on the emission factor of the SIN, reflected in the emissions associated with losses in the distribution and transmission network.

Given this scenario, considering the same water situation as in 2021, with an order in 2030 of the 15.9 GW

thermal park, a 13% reduction in total emissions associated with losses in the distribution network is expected.

In a more optimistic scenario, with an 8.3 GW dispatch in 2030 of the thermal park, this reduction could reach 25%. However, the conservative prospect of reducing emissions associated with technical losses by only 13% is unlikely to occur. However, it is essential to be prepared to deal with possible developments. A viable alternative is to use IRECs as a means to offset our scope 2 GHG emissions.

Our commitments

Low-carbon solutions

As part of our portfolio for the transition to a low-carbon market, we have developed a series of solutions capable of supporting our customers in the process towards less carbon-intensive production models. We invest, for example, in projects that generate carbon credits to offset GHG emissions.

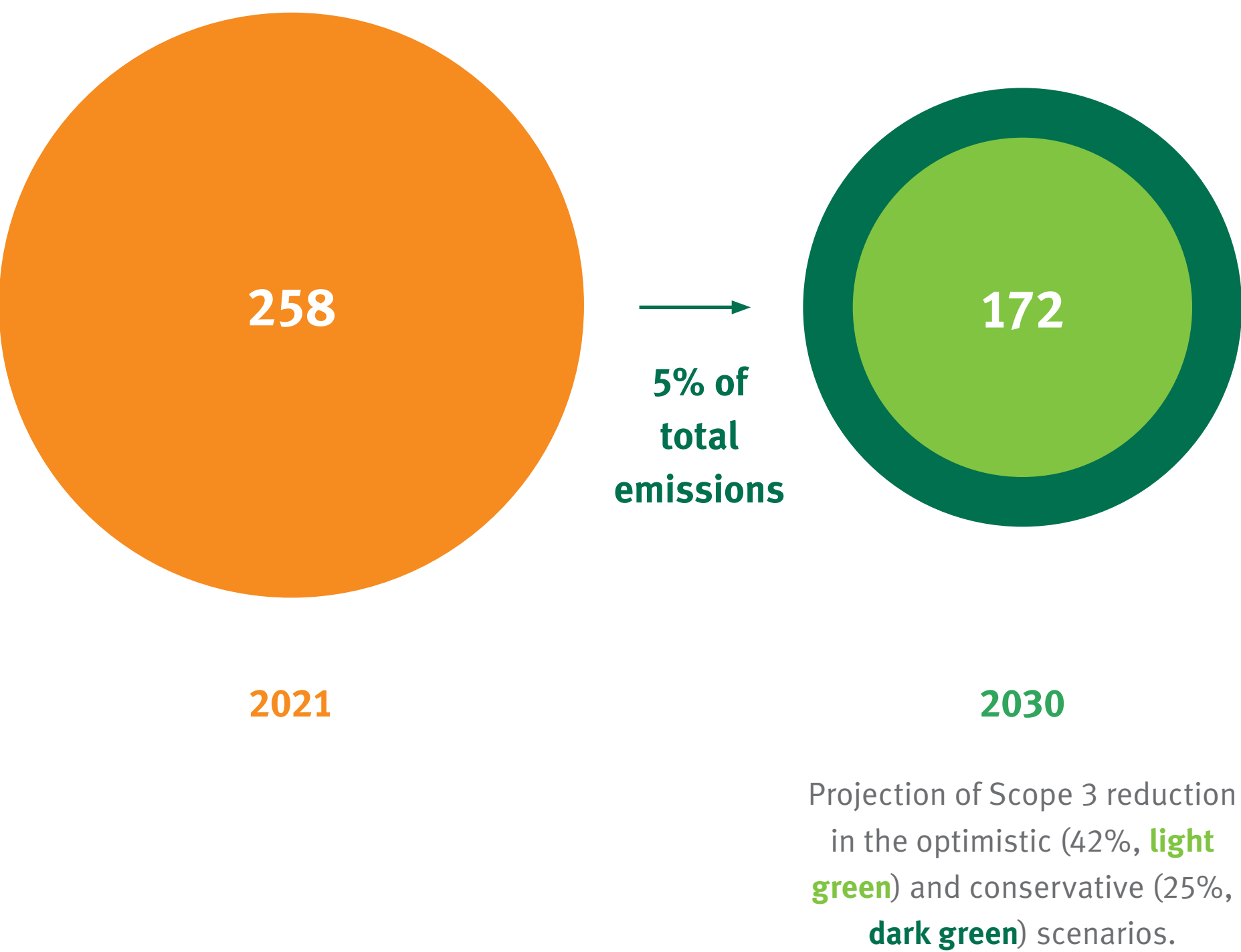
Currently, we have a total of 11 projects, whose estimated offset potential is 2.4 million tons of carbon (tCO₂e) per year. All projects are registered in the regulated market (CDM) or in the voluntary market (VCS).

Among the 11 reported, nine are part of the regulated market and two of the voluntary market.

Each certificate is equivalent to 1 ton of carbon that is no longer emitted.

In relation to the Renewable Energy Certificates (I-RECs), from CPFL Soluções, these ensure that free market customers can purchase 1 MWh of energy produced by renewable sources. Currently, 44 assets in our generation portfolio are already qualified for commercialization. By the end of 2023, we reached more than 3 million certificates sold.

Reduction of emissions in the value chain (ktCO₂e) by 2030, compared to 2021 (baseline).



Committed to containing global temperature rise to 1.5°C, we have outlined two mitigation scenarios for scope 3 emissions. One of them seeks a 42% reduction, while the other takes a more conservative approach, aiming for a 25% decrease (following the SBTi tool).

Our commitments

Supply chain

We are committed to collaborating with our business partners towards a low-carbon economy. To this end, we monitor our critical and strategic suppliers on a monthly basis through the Supply Base Management (SBM) tool.

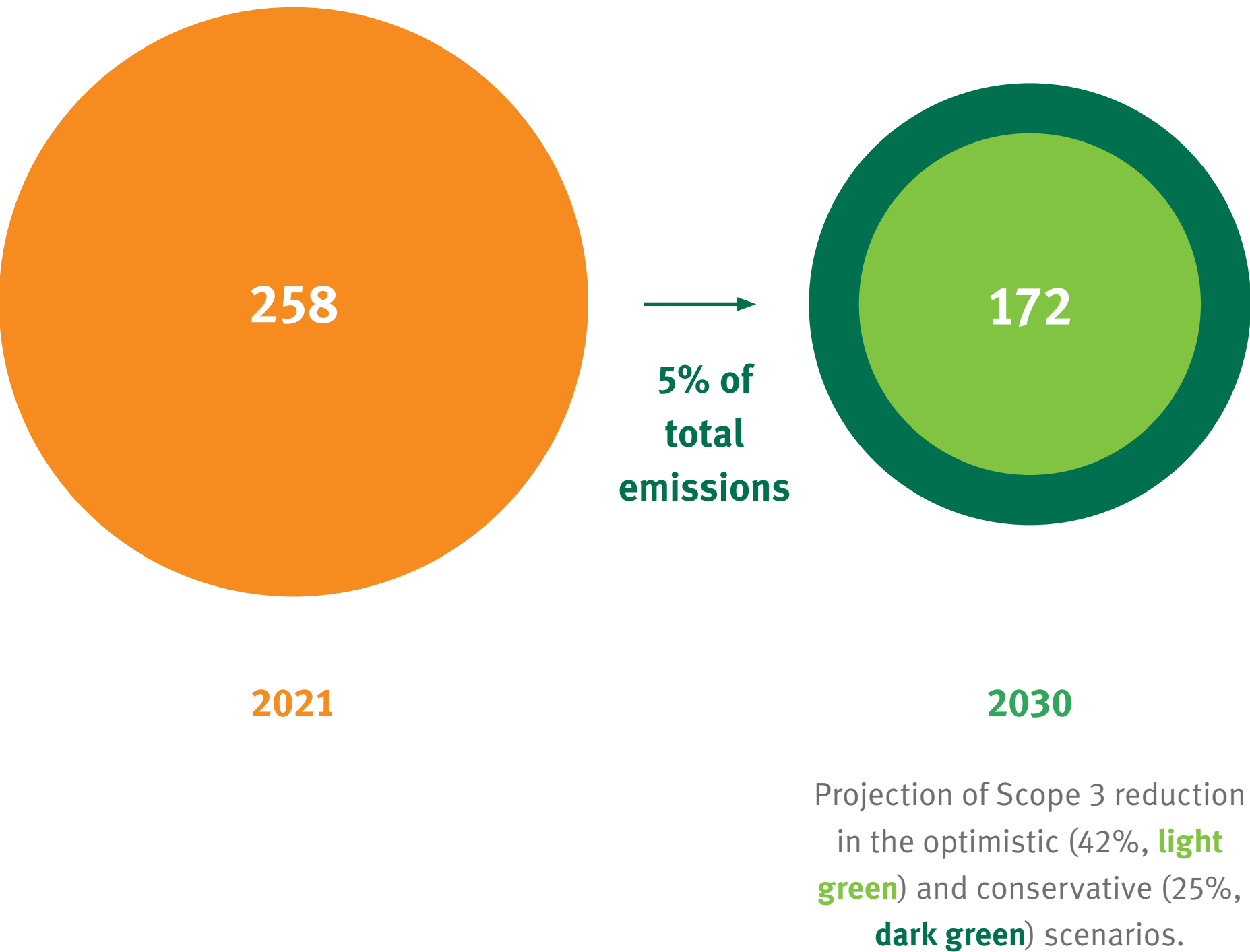
Through this approach, we assess several dimensions, including sustainable and environmental management, consumption efficiency, resilience to climate change, promotion of shared value, and protagonism.

We are committed to assessing 100% of critical suppliers on sustainability

criteria and achieving at least 85% of our spending with companies that have advanced sustainability practices by 2030.

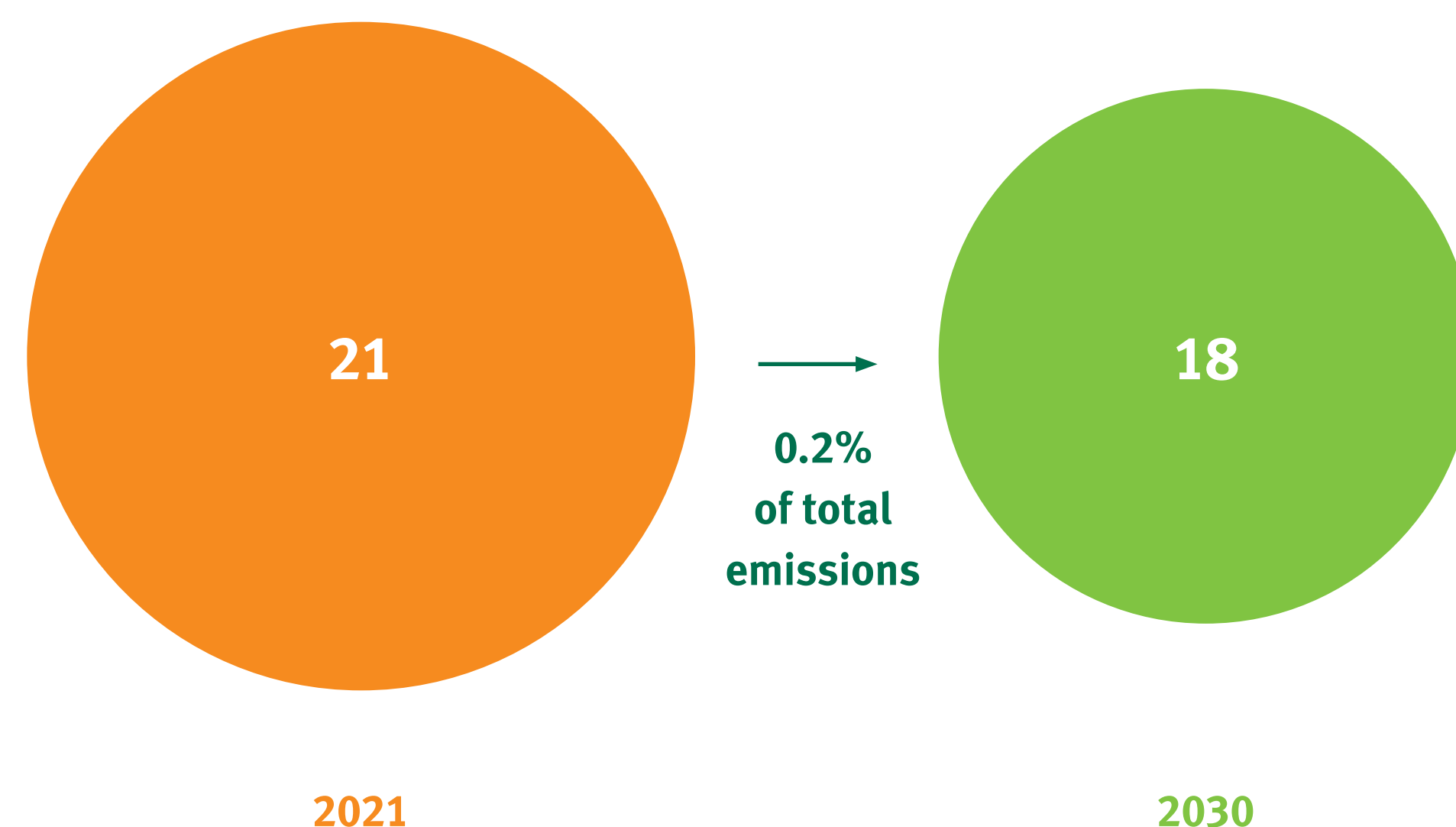
In addition, some of our partners also receive annual audits within the scope of our Integrated Management System (IMS), depending on their level of criticality for our performance, which covers issues of environment, social responsibility, quality, and health and safety. Also with regard to social and environmental risks, CPFL Energia conducts an analysis of its potential new suppliers in the stage prior to their contracting.

Reduction of emissions in the value chain (ktCO₂e) by 2030, compared to 2021 (baseline).



Committed to containing global temperature rise to 1.5°C, we have outlined two mitigation scenarios for scope 3 emissions. One of them seeks a 42% reduction, while the other takes a more conservative approach, aiming for a 25% decrease (following the SBTi tool).

Reduction of fleet emissions*
(ktCO₂e) by 2030, compared
to 2021 (baseline).



*Emissions considering only the diesel precursor for mobile combustion in scope 1 and fuel-related activities not included in scope 1 and 2

Our commitments

Electrification of the vehicle fleet

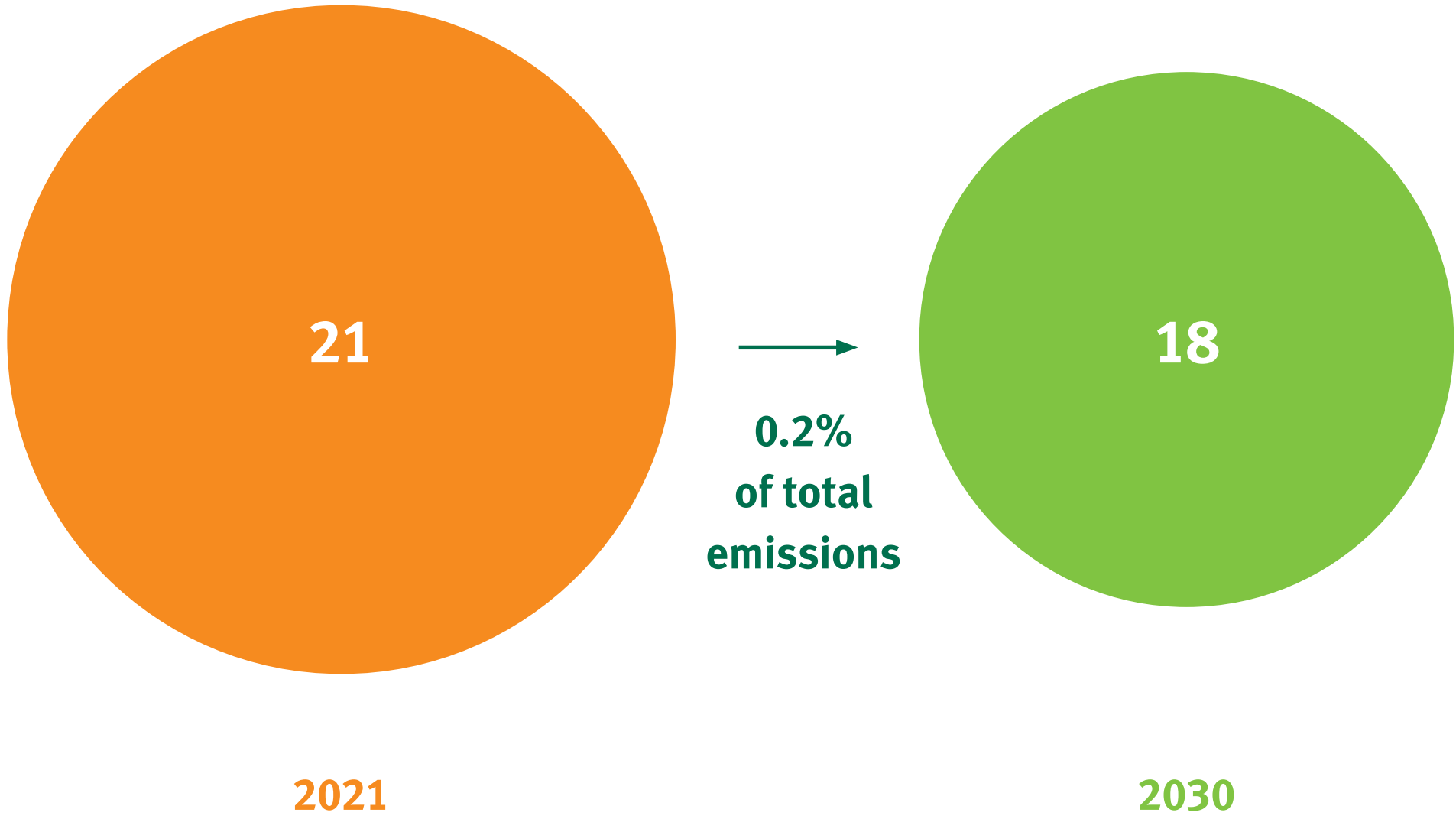
Since 2007, we have been working on projects related to the vehicle electrification of the fleet, being a pioneer in the installation of charging stations (electrostations) that connect the capital of São Paulo to the municipality of Campinas - SP. We seek to understand the impacts, risks and opportunities for the sector in the growth of the electric vehicle fleet and in the infrastructure for a good service of this new model of urban mobility.

For this reason, in 2020, we announced investments of R\$ 45 million in initiatives aimed at electric

mobility during the following four years. In the project in the city of Indaiatuba - SP, under the scope of CPFL Piratininga, we invested R\$ 9.6 million in research and development, as well as in the replacement of all combustion vehicles in the fleet with 22 utility vehicles, including electric trucks.

We also worked on the purchase of 53 vehicles for research on their risks and impacts, and on the development of the first electric truck in PTO (power train output), 100% national.

Reduction of fleet emissions*
(ktCO₂e) by 2030, compared
to 2021 (baseline).



*Emissions considering only the diesel precursor for mobile combustion in scope 1 and fuel-related activities not included in scope 1 and 2

Our commitments

Electrification of the vehicle fleet

In 2022, we completed the electrification of the entire operational fleet of Indaiatuba - SP, with 16 charging stations for battery recharging.

In addition to the reductions in carbon emissions, by about 64 tons per year, with the benefit of improving air quality in large urban centers, the electric fleet also contributes to the elimination of noise pollution, among other benefits.

As next steps, our intention is to expand the project to other local

municipalities, reaffirming our commitment to electrify at least 15% of the distributors' operational technical fleet by 2030, in order to leverage this initiative that is so fundamental on the vehicular environmental front, as well as to structure new destinations and uses for the batteries used by vehicles.

Regarding the portion of the fleet not yet electrified, we reinforced the use of biofuels aiming at lower emissions compared to fossil fuels.



Other mitigation measures

Eco-efficiency

Correct disposal of waste and equipment refurbishment

Waste management within CPFL Energia is a highly relevant topic, especially in the distribution segment. We operate guided by the concepts of circular economy, aiming to reduce the amount of discarded material and expanding solutions for the reuse of equipment and waste recycling, in line with our materiality study.

Our commitment is to ensure that 100% of the key components of our network are directed to recycling or reverse chain systems.

One of the Company's main bets on this front is the process of recovery of transformers and regulators from the energy distribution system, through the Equipment Reformer, under the scope of CPFL Soluções.

With a useful life of 20 years, on average, this is a fundamental piece of equipment for the distribution of electricity. Every month, however, about 1,500 units need to be replaced, either due to obsolescence and damage caused, or due to overloads in the system.



Other mitigation measures

Eco-efficiency

Correct disposal of waste and equipment refurbishment

In this way, we act proactively in the reverse chain of transformers, aiming to reform them so that they can return to activity – in this process, even the oil of the equipment is completely reused. Materials that eventually cannot be reused – such as copper wires, poles and insulators – are sent to recycling companies for correct disposal and improvement of our reverse logistics. It is worth noting that we monitor the entire path taken by such materials, from their generation to their final destination,

in order to ensure an environmentally appropriate process.

To date, we have carried out the revitalization of approximately 60 thousand network equipment since 2017. We reinforce our commitment to further expand this positive impact, aiming at the renovation of at least 70 thousand pieces of electrical network equipment from 2023 to 2030. This initiative covers several devices, such as transformers, voltage regulators, reclosers, among others.



Eco-efficiency

Eco-efficient operations

We act strongly on the eco-efficiency front in our buildings, with improvements based on the following criteria:

- Installation of photovoltaic panels;
- Installation of a cistern for the reuse of rainwater;
- LED lighting system;
- Green areas to reduce heat zones;
- Installation of faucets and automatic actuators/ Duoflex system for coupled boxes;
- Units prepared to meet LEED certification;
- Airy environments with cross ventilation;
- Air blowers, for air exchange in continuous use environments;
- Roofs in thermoacoustic tiles;
- Electric car charging points.

All these points are being monitored by our teams in order to adapt the existing projects (considering that the technical conditions are favorable), in addition to applying them to new buildings.

Renewable and smart solutions

Investing in green hydrogen

Hydrogen has an incipient presence in the current energy sector, accounting for less than 0.2% of global electricity generation. However, since green hydrogen does not emit polluting gases during the combustion and production processes, it can be considered one of the fuels of the future.

In this context, CPFL Energia has positioned itself in research and development projects to study and

obtain a better understanding of the market, regulation and the value chain associated with this fuel.

Our target, within the new ESG Plan, is to invest at least R\$ 40 million in green hydrogen technologies by 2030. Although bold, this goal reinforces our commitment to further increase the Company's portfolio in renewable sources, acting as agents of positive change.



Sustainable operations

Create biodiversity positioning

The management of the biodiversity theme is of immense relevance to us, since we work by establishing processes for obtaining prior licenses for new assets in the generation, distribution and transmission segments, taking care to have the least possible socio-environmental impact even in the design of the project. However, even if such processes follow all the legislation and standards of environmental licensing, the interference in biodiversity on a local scale ends up being inevitable.

We assume, before environmental agencies and communities, the commitment to carry out forest replacement through compensatory plantations of tree species and operations to contain the reduction of vegetation cover, the loss of habitats for fauna, interference in third-party properties and changes in land use.

In addition, we are committed to maintaining the entire area until ecological processes can guarantee

its succession without human intervention, as a way of repairing and mitigating negative impacts in the medium and long term.

We recognize that the implementation phases of generating plants and power transmission lines represent the greatest impacts on biodiversity in our business model. The main aspect related to these impacts is the suppression of native vegetation.

It is no wonder that, in addition to compensating and avoiding possible damages, we are able to enhance our net positive impact within the scope of biodiversity, according to the commitment defined on the subject in the 2030 ESG Plan: to create CPFL Energia's Biodiversity positioning by 2025, to maximize the benefits and value generated by our operations for the environment and society.



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Adaptation

Contextualization

The Brazilian electricity sector faces significant challenges as a result of climate change, which directly impacts the security and reliability of energy supply.

Changes in precipitation and temperature patterns have generated unfavorable weather conditions, such as meteorological droughts, representing a threat to the physical integrity of the assets and the predictability of the operation.

Given this scenario, it is essential to develop a comprehensive adaptation plan, which involves regulatory, commercial, technological, and institutional aspects. Investments in resilient infrastructure, diversification of the electricity matrix, and the adoption of sustainable practices are essential to ensure a clean, affordable, and reliable energy supply, in line with the demands of a changing climate scenario.



Adaptation

Contextualization

At CPFL, we recognize the urgency of addressing the risks posed by climate change and are committed to adopting adaptive measures in our power distribution and generation operations. Through a proactive approach, we constantly seek partnerships and innovation projects that allow us to anticipate necessary adjustments in the face of interference in the electricity grid caused by extreme weather events.

Our focus is on building a more resilient, reliable and weather-safe network, while diversifying our portfolio in terms of technology and

energy sources. We are committed to addressing the challenges of climate change, contributing to a more sustainable and resilient electricity sector.

Adapting to climate change in the electricity sector is a complex challenge, but essential to ensure the country's energy security and the sustainability of energy supply.

It is essential that companies in the sector are prepared to face the impacts of climate change and act proactively in the search for resilient and sustainable solutions.

Distribution

Tough, reliable and secure network

In the distribution segment, we seek to build a more resilient, reliable and weather-safe network through investments in expansion, network reinforcement, automation and equipment modernization. For this, we rely on State Grid's expertise, especially with regard to the incorporation of innovation and more advanced technologies.

With the full implementation of the Advanced Distribution Management System (ADMS), a platform that integrates a wide database and allows the monitoring of assets with more agility and intelligence, we will have evolutions in self-healing (automatic reconfiguration of the network in case of interruption in supply), location of interruptions and dispatch of maintenance teams and identification of technical losses, in addition to other daily activities, ensuring maximum quality

and operational efficiency. On the engineering front, our investments are directed to the technological evolution of the network, with the installation of smarter and remote-controlled equipment. An example is automatic reclosers, which automatically resume operation when there are improper interventions in the network.

In Rio Grande do Sul, we intend to strengthen the distribution networks through backups that will guarantee supply in case of interruptions in locations not supported by electrical substations. We also advanced with the installation of poles produced with new concrete compounds, which allow self-grounding. In this new model, the hardware responsible for the pole frame works as a conductor of energy overloads to the ground, where the energy is dissipated.



Distribution

ADMS Project

The Advanced Distribution Management System (ADMS) is an ultra-modern platform used for the management and optimization of energy distribution systems in more than 160 distribution centers around the world.

CPFL Energia was one of the first companies capable of implementing such a project in the Brazilian electricity sector, in 2020, after almost two years of evaluations, studies and pilots. With a series of integrations in software and new technologies for monitoring networks and equipment, ADMS works by identifying failures in the supply of the network and what are the

necessary actions to reduce the impacted area in a more agile way, always by reading algorithms that automate the operation.

In addition, the platform expands the integration of new intelligent equipment from the installation and virtual mapping of reclosers and remote-controlled switches, without any risk of memory collapse in the computers. ADMS also allows operation teams to have greater agility in decision-making, since the system issues alerts indicating possible impacts and alternatives in order to improve network efficiency, locating failure points more quickly.



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Distribution

Climate risks at the distributor

The CPFL Energia Group, in partnership with Fundação Getulio Vargas (FGV - Center for Regulation and Infrastructure Studies) and Climatempo, carried out the ANEEL R&D project PD-00063-3079/2021 – Resilience of Electric Grids, which aimed to study the resilience of the distribution network of the group's concessionaires in the face of the increase in extreme weather events. Within the scope of the project, a climate threat indicator was

proposed, through which it was possible to identify the regions of the group's distributors with the highest propensity to suffer the impacts of severe events from 2020 to 2050.

The results of the project will serve as input for the CPFL Energia Group to direct its efforts to cope with the consequences of meteorological phenomena of high magnitude and low probability of occurrence.

Network automation

The installation of intelligent and automated equipment in distribution networks is capable of adding value to the business, since it allows the resolution of problems and maneuvers for the resupply of energy with more agility and efficiency. Automatic reclosers, for example, are a solution to temporary interference in the power grid, such as tree branches that touch the cables due to rain and wind. The remote-controlled switches also enable gains in quality and efficiency in operation. The equipment responds to remote commands from system operators, allowing maneuvers to be performed during critical events, which in turn isolates areas without power and decreases the number of affected customers.





Distribution

Reduction of vegetation interference

The interaction between vegetation and the power grid is the main cause of power supply disruptions, especially when extreme weather events occur. Since 2015, we have carried out the Arborização + Segura project, which replaces large trees with species better adapted to urban environments. Each year, the initiative is expanded to more cities in the concession areas via partnerships and agreements with local city halls. The project also includes environmental education actions in schools. In addition to expanding green coverage in urban areas,

the initiative avoids costs related to network maintenance.

Another project, under development by partner startup PixForce, provides for the implementation of an intelligent vegetation inspection system in urban networks, reducing the risk of contact with the power grid in case of rain and enhancing the gains of the Arborização + Segura project. We are committed to adopting smart solutions that enhance safety, promote efficiency, and minimize environmental impacts in our operations.

Investing in smart solutions

We recognize that smart energy solutions are key to ensuring greater resilience in the face of climate change. We have set ourselves the goal of achieving a significant level of investments, totaling at least R\$ 580 million in smart energy solutions by 2027.



Distribution

Weather predictive solutions

Through innovation programs, we seek to identify solutions that help us anticipate extreme weather events. With these solutions, we were able to plan network reinforcement actions in the regions most affected by these events and better prepare the teams.

With the Weather Translator System (WeTS), which employs advanced artificial intelligence techniques, we cross-reference weather forecast data to our criticality levels and operational impact to establish 24-hour and 72-hour scenarios across our concession area.

WeTs

WeTS, implemented in the Operations Centers of the distributors, contributes to the planning and allocation of teams in case of storms. In the future, the initiative will use low-cost weather stations, a solution under development by partner startup Pluvi.On.

Generation

Diversified portfolio

Our diversified generation portfolio in terms of technologies and energy sources (hydro, wind, biomass, and solar) and our presence in different regions of the country contribute to the resilience of businesses, which

will not be uniformly impacted by climate risks. In addition, we reinforced the commitment in our 2030 ESG Plan to generate energy 100% from renewable sources by 2030.

Maximum asset efficiency

CPFL Renováveis has a maintenance and operation plan that aims to boost the renewable energy produced to the maximum, regardless of adverse weather conditions. A concrete example of this effort is the Advance Plan, which brings together initiatives to improve the operation of the plants, standardize processes, qualify employees and implement new technological tools.

Asset management is carried out at the Integrated Operations Center (IOC) and considers information from the generation units, monitored remotely through sensors.

The integrated view and rapid communication of data guide proactive actions to ensure the availability and reliability of the plants. The increasing use of data analysis and machine learning tools, for example, makes it possible to anticipate failures and provide more precision to preventive maintenance plans, reducing costs and downtime. In addition, the primarization of operations is underway, which will result in better control of assets and results.



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Generation

Improving efficiency with predictive generation solutions

In a scenario of constant search for efficiency and innovation, the adoption of predictive actions has proven to be fundamental. In this context, the Eurus540 R&D project aims to achieve the most accurate wind forecast in the Northeast in the market, also incorporating highly accurate rainfall forecasts throughout Brazil. This initiative contributes significantly to anticipating possible challenges related to water availability, allowing for more efficient management of natural resources.

In addition, we are committed to the development of forecasts of extreme weather events, using models from the National Electric System Operator (ONS) and other renowned models in the market. The constant search for the improvement of internal generation forecasting processes, through the use of models to better study the variations between projection and realization, is a priority in our innovation strategy.

To complement our knowledge and expertise, we have the support of consultancies specialized in the analysis of meteorological scenarios, especially in the evaluation of hydrological scenarios.

This partnership allows us to have a comprehensive and in-depth view of climate conditions, assisting in strategic decision-making. Another relevant point in our strategy is the renegotiation of the operation's hydrological risk, measured by the Generating Scaling Factor (GSF), which measures the relationship between the volume of energy generated by the plants and their physical guarantee. This approach reflects our commitment to responsibly managing the risks inherent to our operation, always seeking to improve our practices and processes.

We are committed to continuing to invest in innovation and technology, always seeking to be at the forefront of the best practices in the market.



Generation

Innovations in dam safety

We are responsible for the safety of 55 dams across the country, covering a variety of types, degrees of instrumentation, heights. And, for us, safety is a non-negotiable commitment.

In the generation segment, one of the main initiatives is related to the inspection of the conditions of the dams that form the reservoirs of hydroelectric plants and SHPs, with the use of high-precision instruments and internationally recognized methodologies to ensure the reliability of the structures.

To ensure the safety of the dams, each plant has a specific monitoring team, which is also responsible for entering the information into the Dam Safety Management System (SGSB), a digital tool developed by the company that enables real-time management of the behavior of the dams through a database with cloud computing resources. In addition, an engineering team conducts regular inspections of the structures.

The monitoring system is constantly being improved, and there are several Research and Development (R&D) projects focused on the theme.

Highlights in R&D

High Resolution Seismic Dam Monitoring System

Development and implementation of a distributed acoustic sensing system for real-time seismic monitoring of dams, promoting digital transformation and increasing operational safety.

BIM – Bulding Information Modeling

Development of a platform that enables the visualization of dams and spillways in a 3D environment, using the concept of digital twin that can be used to monitor sensor data in real time, perform simulations and develop alert systems, as well as be used as a plant operation interface.

Generation

HYDRO 4.0

Based on the large volume of data and with the objective of providing better risk management and support for technical and management decisions, the Hydro 4.0 Project was developed, CPFL's digital dam safety platform, whose data is presented at the Dam Management Center, ensuring:

Availability of data in real time; forecasting of meteorological events

(such as major floods); monitoring of the watershed; operational data; information on the behavior of the dams through instrumentation data; camera images; health index of structures calculated by machine learning models developed by CPFL.

From the Dam Management Center, we continuously and systematically monitor the behavior of all dams, as well as the weather forecast.

Highlights in R&D

High Resolution Seismic Dam Monitoring System

Development and implementation of a distributed acoustic sensing system for real-time seismic monitoring of dams, promoting digital transformation and increasing operational safety.

BIM – Bulding Information Modeling

Development of a platform that enables the visualization of dams and spillways in a 3D environment, using the concept of digital twin that can be used to monitor sensor data in real time, perform simulations and develop alert systems, as well as be used as a plant operation interface.



Engagement and transparency

Supply chain engagement

CPFL acts proactively in all stages of the relationship with suppliers to strengthen their capacity as agents of change in the various aspects of sustainability. To support partners in the face of the climate challenges of the electricity sector and maximize the positive effects of the chain for society as a whole, we are improving the instruments to promote good practices.

In 2021, we systematized the sustainability pillar on the Supply Base Management (SBM) platform, which monitors strategic suppliers, identified based on operational and reputational risk criteria. 11 criteria are now part of the monitoring, distributed in four dimensions: climate change, sustainability and

environmental management, eco-efficiency and management of resource consumption (energy, water and materials) and shared value and protagonism.

The performance of the companies is monitored through self-assessment questionnaires with documentary evidence.

The information allows us to learn more about the practices already adopted by them, direct training and development plans together. In addition, CPFL assumes in the new ESG 2030 Plan a commitment to evaluate 100% of critical suppliers and achieve 85% of spending with companies that adopt advanced sustainability practices.





Development

We maintain an agenda of meetings with suppliers to discuss topics such as quality, safety, sustainability, future scenarios and new business and encourage the exchange of experiences and good practices through the Value Network platform. The discussions guide new actions and were the basis for the creation of a training program on corporate GHG inventories for partners.

We also recognize the best practices of our suppliers through the Mais Valor Award – Sustainability Category.

Impulse Instruments

The specific focus on climate change will integrate the management of suppliers that is already carried out in the various stages of the relationship: evaluation, monitoring, development and recognition of good practices.

Participation in initiatives

We are signatories to different commitments related to climate change. In addition to proving our commitment, participation in these forums and in these initiatives highlighted below allows us to exchange experiences and learning with other actors and contribute to the advancement of innovations and the necessary adjustments to address the issue.

Carbon Disclosure Project

In 2023, we were recognized for the first time in our history with an A grade in CDP's climate questionnaire, becoming part of the select A List, of companies considered leaders in transparency and climate action. Our performance in CDP contributed significantly to our second-place position in ISE B3.

It is worth mentioning that of the 23 thousand companies that were ranked, only 1.7% were classified in the A list. (la-pt.cdp.net)

CDP Climate Change: Graded A
CDP Water Security: Graded B



Science-Based Targets Initiative (SBTi)

Also in 2023, we submitted our emissions reduction target to the SBTi, in line with international best practices, which is now under evaluation.

By joining the SBTi, our targets will be validated and based on the latest climate science, ensuring that the company's actions are aligned with the urgent needs of climate change mitigation. (sciencebasedtargets.org)





Other participations and recognitions

United Nations (UN) Global Compact Network Brazil
(pactoglobal.org.br)

Joining the Net Zero Ambition Movement
(pactoglobal.org.br/movimento/ambicao-net-zero)

Initiatives within the scope of the Center for Sustainability Studies
(FGVces) – Fundação Getulio Vargas
(eaesp.fgv.br/centros/centro-estudos-sustentabilidade/projetos/programa-brasileiro-ghg-protocol)

Brazilian GHG Protocol Program
Gold seal in the GHG emissions inventory, granted by the GHG Protocol
(registropublicodeemissoes.fgv.br)

B3 Corporate Sustainability Index
(iseb3.com.br)

B3 Carbon Efficient Index (ICO 2)
(b3.com.br/pt_br/market-data-e-indices/indices/indices-de-sustentabilidade/indice-carbono-eficiente-ico2-b3.htm)

Task Force on Climate-related Financial Disclosures
(fsb-tcfd.org)

São Paulo Environmental Agreement – Government of the State of São Paulo
and Environmental Company of the State of São Paulo (Cetesb)
(cetesb.sp.gov.br/acordo-ambiental-sao-paulo)

Joining the Movement + Water Global Compact
(pactoglobal.org.br/movimentos/movimento-agua)

