



Climate Adaptation and Resilience Report 2025

This report

This publication aims at complementing the information on adaptation practices reported in EDP’s Integrated Annual Report. It details the Group’s practices for ensuring a resilient business under the present and future vulnerabilities of climate change. It covers the global context, management approach and selected best practices and learning lessons.

The content of this document does not follow a specific standard and covers the overall scope of the Group, used for annual disclosure.

This thematic report is part of the pack of thematic reports being published every 3–5 years. Being a material issue, under CSRD compliance requirements, Adaptation content will continue to be included in EDP’s Climate Transition Plan and EDP’s Integrated Annual Report.

Message from the CEO



Miguel Stilwell d'Andrade
CEO of EDP and EDPR

Since 2000, climate-related disasters have caused over \$3.6 trillion in damages. 2024 marked the first year with global temperatures exceeding 1.5°C above pre-industrial levels – a critical threshold. Heatwaves, floods, droughts, and wildfires are now routine, presenting operational challenges across our industry.

Without decisive action, physical risks could cut corporate profits by up to 25% through 2050 and shrink global GDP as much as 22% by 2100. By 2050, the world could experience roughly a 19% drop in global economic output compared to a scenario without climate change, equivalent to about \$38 trillion in annual losses.

While it is imperative to diversify the global energy mix, we must promote resilience and adaptation to current circumstances and recognise the need to have adaptation practices going hand-in-hand with our mitigation effort. EDP's strategy combines investment in renewable energy with efforts to strengthen resilience and to lower exposure to climate risks while supporting long-term operational stability. Our risk management framework identifies vulnerabilities and guides actions that reduce financial impacts and unlock new opportunities.

This Report outlines EDP's strategic response to the growing risks of climate change. We are embedding adaptation into our business model through long-term planning and short-term action, primarily in our hydro-generation business and grids. We are investing in climate services to build a robust and flexible energy system. Partnerships with academia and insurers further enhance our ability to anticipate and respond to climate needs.

Our investments are already yielding tangible benefits. A recent example is the Aldaia substation in Valencia, which remained operational during severe flooding and enabled the swift restoration of services thanks to its climate risk-informed design. Furthermore, artificial intelligence is playing an increasingly pivotal role.

In Brazil, AI-powered tools now support planning teams with enhanced capabilities to assess climate and operational risks, enhancing strategic decision-making and safeguarding uninterrupted service for our customers.

I invite you to explore this Report and join us in building a more resilient, sustainable future for all.

Miguel Stilwell d'Andrade

Index

Climate Adaptation and Resilience Report

01 Who we are 5	02 Navigating in a changing climate 8	03 Embedding adaptation into our strategy 13	04 Approaching climate adaptation 20
05 Preparing for the Future: EDP's Response 25			

01

Who we are

1.1. Our business model

1.2. Global presence

6

7

Parque Híbrido de Cruz del Hierro | Spain

Our Business Model

EDP is a utility present in four regional hubs: APAC, Europe, North America and South America.

The Group’s businesses are currently focused on the generation, transmission, distribution and supply of electricity and natural gas. Although complementary, the group also operates in related areas such as engineering, laboratory tests, professional training, energy services and property management.

1. Generation

	29 GW Installed capacity	31% Hydro
		54% Wind
	57 TWh Net Generation	11% Solar
		4% CCGT
	86% Renewable sources	0.5% Coal
		Distribution per technology



2. Transmission

	1,388 km Transmission networks under construction	1,871 km Operating Transmission networks
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3. Distribution

	387,181 km Distribution networks	64,861 km Underground lines
	322,320 km Overhead lines	89.6 TWh Electricity distributed

4. Supply

	8,316K Electricity customers	11.9 TWh Electricity supply points
	564K Gas costumers	4.5 TWh Gas supplied

Global presence

Our Presence is structured around 5 regional hubs



Note: Data corresponds to FY2024.

95%

renewable
energy
generation

57 TWh

energy produced

12,596

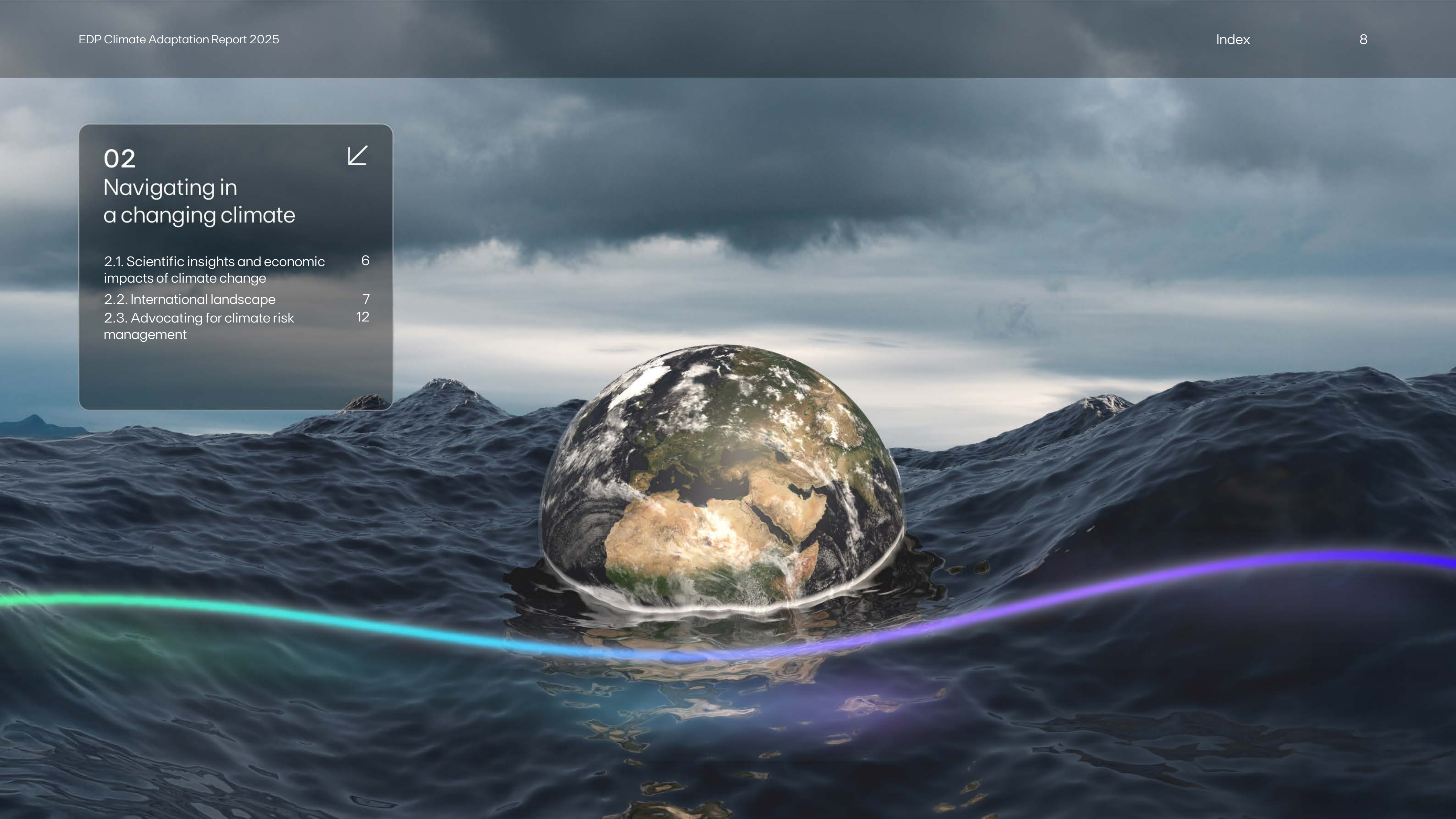
employees

02

Navigating in a changing climate

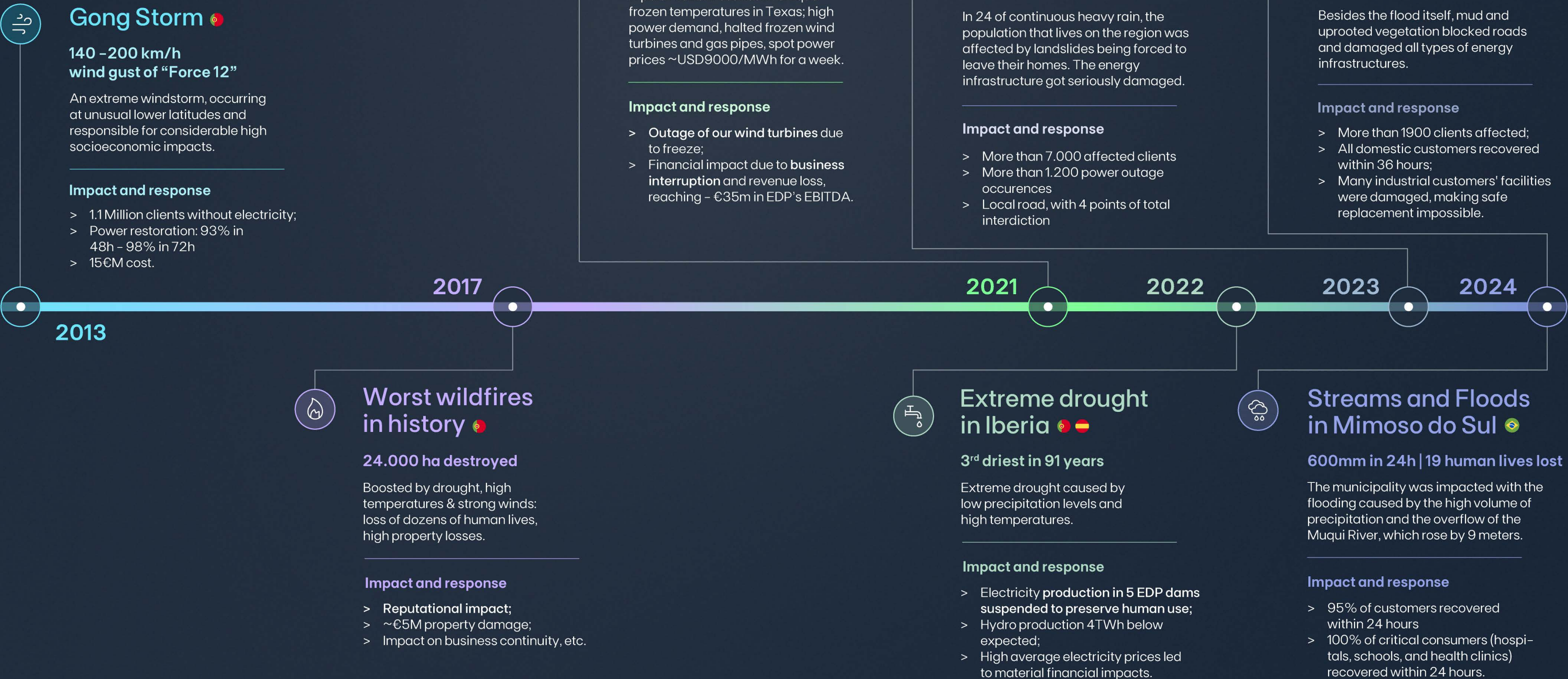


2.1. Scientific insights and economic impacts of climate change	6
2.2. International landscape	7
2.3. Advocating for climate risk management	12



Tracking Climate Extremes

EDP impacts and response



Navigating in a changing climate

2.1 Scientific insights and economic impacts of climate change

Climate change is already affecting every region of the world, and its economic consequences are mounting. Recent scientific reports underscore unprecedented changes in the climate system and project significant impacts on global economies. According with World Meteorological Organization (WMO), 2024 marked the first year with global temperatures exceeding 1.5°C above pre-industrial levels, yet the goals of the Paris Agreement are still considered attainable.

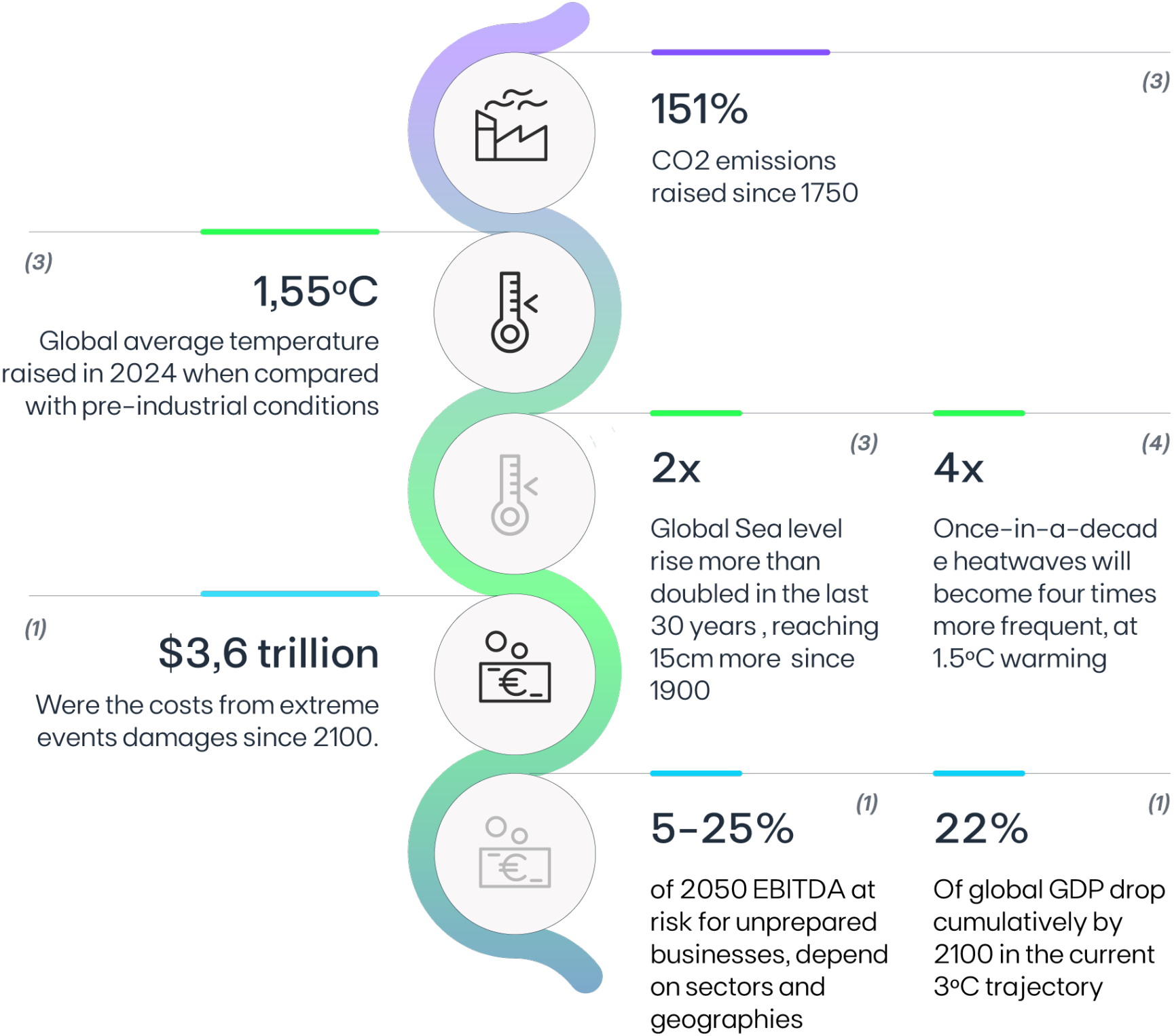
Continued warming increases the risk of crossing tipping points in the climate system. Scientists warn that beyond 2°C of warming, irreversible changes may be triggered with catastrophic long-term economic and ecological consequences. Adaptation limits exist and show that mitigation (emissions reduction) and adaptation must go hand-in-hand to secure a liveable future.

The consequences of inaction are severe. Climate-related disasters have already caused over \$3.6 trillion in damages since 2000¹. Recent research from Potsdam Institute indicates that by 2050 the world could see roughly a 19% reduction in global economic output compared to a scenario with no climate change – representing about \$38 trillion in annual losses by 2050.

According to the IPCC Sixth Assessment Report (AR6), decarbonizing the power sector is critical and must achieve net-zero greenhouse gas emissions before 2050. Additionally, based on scientific evidence, SBTi interprets that companies in the energy sector must achieve Net Zero before 2040 in order to contribute adequately to the 1.5°C pathway, and specifies this in its ‘SBTi Power Sector Guidance’. These scientific conclusions underscore the sector’s pivotal role in driving the energy transition within a socio-economic model that is fundamentally reliant on energy availability.

Adapting to climate change at an early stage reduces uncertainty and improves long-term planning reliance. According to the Global Commission on Adaptation, every \$1 invested in early warning systems and resilient infrastructure can yield \$4 to \$10 in avoided losses².

These facts underscore the urgent need to accelerate the energy transition and normalize adaptation efforts in response to a climate reality that must not be allowed to worsen.



¹ WEF (2024), The Cost of Inaction: A CEO Guide to Navigating Climate Risk. In collaboration with BCG.
² OECD (2023), Enhancing the insurance sector’s contribution to climate adaptation, OECD Business and Finance Policy Papers, OECD Publishing, Paris, <https://doi.org/10.1787/0951dfcd-en>.

Mitigation and Adaptation are two faces of effective Climate Action

Investing in adaptation and improving the resilience of assets are not isolated efforts; instead, they support the larger, widely recognized objective of lowering emissions.



2.2 International landscape

Climate adaptation has emerged as a central pillar of global climate policy, driven by the increasing frequency and severity of climate-related impacts. While early international efforts focused primarily on mitigation, the growing recognition of unavoidable climate risks has elevated adaptation to a priority on the global agenda.

In the early days of the United Nations Framework Convention on Climate Change (UNFCCC), adaptation was largely framed as a concern for developing countries, with the creation of dedicated adaptation mechanisms being established in the early 2000s. It was only at COP 16 in Cancun in 2010 that adaptation was formally recognized as a distinct and essential component of climate action. The Cancun Adaptation Framework established the Adaptation Committee, promoted the development of National Adaptation Plans (NAP), and emphasized the need for financial and technical support.

The Paris Agreement (2015) marked a turning point by embedding adaptation into the core of international climate governance. Article 7 introduced a Global Goal on Adaptation, aiming to enhance adaptive capacity, strengthen resilience, and reduce vulnerability to climate change. This elevated adaptation to a global responsibility, not just a national or local concern.

In the same year, the Sendai Framework for Disaster Risk Reduction 2015–2030 was adopted by UN Member States, aiming to reduce disaster risk and enhance resilience globally. It promoted the integration of climate risk into business continuity planning, insurance models, and infrastructure design.

Since then, countries have been setting NAP, with an increasing trend towards including infrastructures, particularly from the energy sector. According to the recent Sharm el-Sheikh Adaptation Agenda – Annual Implementation Report 2024, 41% of adaptation components of NDCs reference energy, and investments of \$310 billion in grid resilience to extreme events and flexibility were reported in 2023.

The evolution of international climate adaptation policy reflects a growing awareness of the need to prepare for and respond to climate impacts. As the world moves deeper into the era of climate consequences, adaptation will remain a cornerstone of sustainable development, with the power sector playing a crucial role by providing resilient infrastructures while working hard to continue leading the energy transition and limiting the worsening of climate-related impacts.

Source: Adapted from Eurelectric (2022), The Coming Storm: Building electricity resilience to extreme weather.

2.3 Advocating for climate risk management

The increasing knowledge on the financial risks of climate change to the global economy led to a wave of increasingly stringent regulatory frameworks underlining the need of having Adaptation as a strategic priority for organizations. The most relevant and impactful one is the EU Taxonomy for Sustainable Activities, a classification system developed by the European Union to define which economic activities can be considered environmentally sustainable.

Under the EU Taxonomy, Adaptation is a key environmental objective and may be considered as a substantial contribution to sustainable development or under the **"Do No Significant Harm"** criteria, with sustainable activities having the need to demonstrate that:

- a thorough climate risk and vulnerability assessment was conducted.
- an effective adaptation measures based on risk assessment, were implemented; and
- a continuous monitoring and reporting of the adaptation measures and their effectiveness is reported.

Within the European Union, the Corporate Sustainability Reporting Directive (CSRD), through its European Sustainability Reporting Standards (ESRS), further emphasizes the strategic importance of adaptation, providing the framework developed by TCFD. The primary focus remains on embedding adaptation into corporate decision-making, ensuring that businesses are prepared for Climate-related challenges while contributing to a sustainable future.

The Risk Preparedness Regulation aims to avert, adapt to and handle electricity crises including those driven by extreme weather. Under Regulation (EU) 2019/941 on risk preparedness in the electricity sector and Directive (EU) 2022/2557 on the resilience of critical entities, the identification and regular update of electricity crisis scenarios is contemplated at both national and regional levels.

Additionally, national strategies on adaptation can support priority setting of actions and strengthen the need of collaboration among key stakeholders towards effective local approaches to the subject.

Key international standards used by EDP:

- **EU Taxonomy**, promote climate resilience by ensuring that assets meet the Do No Significant Harm criteria for adaptation to climate change.
- **Taskforce on Climate-related Financial Disclosures (TCFD)**, established to develop a set of recommendations for voluntary and consistent climate-related financial risk disclosures. Since 2024, its monitoring responsibilities were assumed by ISSB – International Sustainability Standards Board
- **EU Strategy on Adaptation to Climate**, for better alignment with public priorities.
- **ISO 14090:2019 and ISO 14091**, to work under a recognized international global standard and better align this process with other ISO standards in place.
- **European Sustainability Reporting Standards (ESRS) under the EU Directive 2022/2464 (CSRD)**, which require companies to disclose climate adaptation strategies, risks and resilience measures in a standardized and transparent way.

03

Embedding adaptation
into our strategy

3.1. Supporting a resilient
business strategy

3.2. Enhancing operational
response

14

17





Embedding adaptation into our strategy

EDP’s new business plan 2026–2028 commits €12 billion to drive growth and resilience in a volatile global landscape. The company is accelerating renewable energy, strengthening electricity networks, and supporting stakeholders in building a climate-positive future.

Having a science-based recognized decarbonization targets, EDP is at the forefront of climate mitigation, contributing daily to limiting the global average temperature to 1.5°C degrees, when compared to pre-industrial levels.

Mitigation and climate adaptation can no longer be addressed independently and recognizing the challenges ahead, EDP’s strategy has undergone stress testing against various climate scenarios to ensure:

- **A robust and resilient portfolio**
- **Its contribution to a flexible and solid electricity system**
- **The maintenance of high-quality service to its clients**

To accelerate the integration of an adaptation mindset into daily activities, internal advocacy and targets were set in 2020. By 2022, main high-risk regions and technologies had to be included in local adaptation plans, with the first round of the implementation stage ongoing until 2025. By 2028, EDP will ensure that its infrastructure exposed to significant climate risks is covered by adaptation plans.

3.1. Supporting a resilient business strategy

Planning for growth under a challenging physical environment where climate change is already being felt, several key characteristics of EDP’s business can be highlighted as significant to guarantee and improve its overall resilience to climate change.

Diversifying technologies and geographies

EDP has been increasing its presence in new markets and geographies using an active asset rotation strategy to accelerate growth and diversify its portfolio. With a firm commitment to all renewable energy sources, EDP is expanding its generation technologies, from hydro, to wind and solar, and adding more innovative ones, such as hydrogen and battery-based storage. The geographic and technological diversification of its asset portfolio significantly reduces the impact of extreme weather events, as they will always have a regional impact and are less likely to affect the full technological diversity of the assets.

- **Geographic diversification:** entering different markets to reduce regional climate risk exposure.
- **Technological diversification:** investing in a broad mix of renewable energy sources—hydro, wind, solar—and emerging technologies like hydrogen and battery-based storage.

Enhancing energy flexibility

EDP has been investing in two different storage technologies, with an increasing role to play under a more variable and changing climate:

- **Pumped storage.** Hydroelectric power plants are equipped with reversible turbines, making it possible to use surplus energy – not being fed to the grid – by pumping water in the opposite direction and refilling the upstream reservoir. That water is then turbinated again during ‘peak’ consumption needs.
- **Battery Energy Storage Systems.** A less mature technology, ensures system flexibility and supports continuous availability, even under adverse conditions. It provides a rapid response capacity to network disruptions, particularly important for essential infrastructures and vulnerable communities, where maintaining a stable power supply can have a direct impact on security and survival.

2.5 GW
installed capacity
pumped storage
in Iberia

Both these technologies contribute to the flexibility and security of the electricity system, promoting more efficient management of the power grid during demand peaks or variations periods. Pumping can cover long-term changes in demand needs, and battery storage can easily meet short-term variations. Both solutions are fully complementary to reinforce resilience to the system. In a climate change scenario, a reduction in global water availability is expected. Pumped storage technology plays a key role in optimising this scarce resource, enabling integrated management of energy and water systems, thereby maximising efficiency and resilience.

To strengthen operational stability, EDP invests in **generation hybridisation**, integrating renewable energy sources — such as wind, solar, and hydroelectric power plants. This approach optimises generation efficiency, reduces costs and improves supply stability.

By integrating multiple renewable energy sources, the reliability and stability of the energy supply are enhanced, as it no longer relies solely on a single natural resource. Additionally, the system's resilience to extreme weather events is enhanced, as different technologies are impacted to varying extents by climatic conditions.

As an integrated energy company, EDP is allocating 30% of its total investment plan to distribution and transmission networks, recognizing their critical role in enabling the energy transition and supporting increased electrification. Under its 2026–2028 Business Plan, €3.6 billion in gross investment is dedicated to strengthening electricity networks, in Portugal, Brazil and Spain.

These investments are focused on enhancing grid resilience, increasing its capacity to integrate distributed generation, and adapting to evolving consumption patterns in an increasingly electrified economy. Resilience improvements include the smarter use of advanced materials that better withstand extreme weather conditions (e.g. on the use of fibreglass poles, detailed in section 5.3.4), as well as the deployment of network components designed to cope with challenges such as high winds and elevated temperatures (e.g on the use of polymer insulators instead of porcelain ones, virtually eliminating the occurrence of failures due to breakage from thermal stress).

Battery Energy Storage
Systems in hybrid
projects

207 MW
installed capacity

254 MW
under construction

€3.6
billion
in gross investment

is dedicated to
strengthening electricity
networks,
in Portugal, Brazil
and Spain

Developing grids automation

The growing digitalization of electricity grids enables real-time monitoring, rapid fault detection, and adaptive load management, enhancing grid robustness and responsiveness during climate-related disruptions. This allows for faster, more efficient responses to outages and demand fluctuations.

Between 2026 and 2028, more than €1 Bn will be invested in the Energy Transition (Digitalization and Electrification & Decarbonization). Smart meter penetration has already reached 100% in Iberia, and is expected to exceed 70% in Brazil by 2026. Additionally, over 85% of EDP’s assets are now equipped with advanced analytics capabilities.

More than
€1 billion

invested in digitalization
and electrification &
decarbonization, between
2026 and 2028

Partnering to improve climate modelling

EDP is actively collaborating with academic institutions and research centres to reduce local uncertainties in climate modelling and enhance the quality of information used in decision-making. These partnerships have led to innovations such as:

- **Techniques for weighting climate models** to generate representative probabilistic distributions of wind speeds across future climate scenarios.
- **An ad-hoc methodology for projecting changes in solar PV output** at any geographic location, comparing future climate scenarios with historical reference periods.

To support climate-resilient planning, EDP has adopted a climate services tool backed by robust scientific expertise and global data coverage. This tool identifies vulnerabilities in the current asset portfolio, informs the design of adaptation measures, and enables early assessment of climate hazard exposure for future investments. It also supports strategic decisions in investment planning, adaptation strategies, and insurance design by quantifying potential climate-related losses.

The role of insurance

The insurance industry is being significantly impacted by climate change, with extreme events resulting in substantial financial losses for insurers and higher premiums or reduced accessibility or coverage reevaluation becoming an emerging risk.

In response, the sector is increasingly integrating climate risk assessments into their underwriting processes and working closely with their clients to mitigate these potential negative effects by promoting risk awareness and encouraging the adoption of climate resilient practices. Examples exist of incentives being offered to invest in infrastructure resilience.

For instance, the lead insurer in one of EDP’s major property programs has launched a targeted initiative to support clients like EDP in enhancing climate resilience and reducing exposure to natural hazards. This initiative includes a 5% premium offset to incentivize the implementation of risk management strategies against threats such as wind, flooding, and wildfires. This credit is part of a broader effort to help organizations strengthen their resilience to climate change and extreme weather events.

Key Actions

Invest in climate-resilient infrastructures

- Bundle insurance assets both of geographies (globally) and types of assets (e.g., generation and network assets)
- Work closely with insurers to enable an accurate assessment of the asset base risks
- Engage with insurers and industry peers to advocate for fair and sustainable insurance solutions and share best practices
- Reduce reliance on external coverage by building financial reserves for self-insurance.

3.2 Enhancing operational response

Electricity is a cornerstone of modern economies, and EDP has a long-standing history of delivering this essential service with a consistent focus on quality improvement.

Having witnessed the impacts of extreme weather events—and anticipating a future where such events are expected to become more frequent and intense—EDP is proactively adapting its short-term processes and operational strategies. These efforts aim to enhance preparedness, ensure a swift and effective response, and strengthen recovery capabilities in this evolving climate context, all while maintaining excellence in service delivery.

Business continuity and preparedness have been increasingly relevant in the response to the adverse effects of climate change, enabling the mitigation of impacts on essential services and critical business operations, which contributes to excellence in service delivery. The ability to anticipate and consistently and timely address potential threats and negative consequences and outcomes, has proven invaluable in meeting the needs of our stakeholders.

Going beyond climate related events, strategic crisis response is internally covered by the internal global crisis management system, designed to adequately respond to protect the people involved, the assets affected and the business itself, and led by a crisis management team, headed by the Executive Board of Directors and Chief Executive Officer.

Invest in climate services to improve energy management

The increasing penetration of renewable energy into the electricity system heightens its vulnerability to weather variability and requires more sophisticated energy balancing strategies. While climate services have long supported energy management decision-making, they are now becoming essential tools—not only for operational planning, but also for enhancing preparedness and emergency response to extreme weather events.

These climate services operate on two key time horizons:

- **Short-term forecasts (days ahead)** at the plant level, which estimate power production and potential energy losses—such as those caused by ice accretion on turbine blades during winter months.
- **Seasonal forecasts (months ahead)** at the regional level, which predict deviations in wind speed, solar irradiance, and total precipitation from long-term climatological averages.

Both types of forecasts are delivered in probabilistic terms to account for inherent uncertainties—an essential feature for informed and resilient decision-making.

Adequate teams and processes

As extreme weather events become more frequent and intense, EDP has been evolving its emergency response strategies to enhance preparedness and resilience. This includes strengthening the readiness and availability of teams and technical resources.

Human and physical assets have been reorganized to improve operational availability, strengthen technical capabilities, and expand internal expertise—critical steps in maintaining the company’s competitiveness amid escalating climate challenges.

A clear example of this adaptation is the increased flexibility of EDP’s Operations & Maintenance (O&M) teams, which can rapidly scale up staffing during extreme events. In South America, personnel from back-office departments can be mobilized, and support can be requested from other group companies within the same country during contingencies. This is enabled by a dynamic, multi-tiered team activation model designed to respond effectively based on the severity of each event. The model includes specific protocols and training to ensure a swift and coordinated response.

EDP has also equipped both internal and external teams with the necessary technical resources—such as vehicles capable of operating in adverse conditions—and arranged special transport through external providers to maintain mobility during events like heavy snowfall or flooding.

Preparedness extends beyond workforce readiness. EDP has identified critical materials and actively manages the stock of essential grid components to ensure timely repair and replacement of damaged infrastructure.

Additionally, work procedures have been adapted to include protocols for extreme weather conditions—for example, postponing scheduled activities during high temperatures—reinforcing the company’s ability to respond safely and effectively to climate-related disruptions.

Following each critical event, technical teams and leadership conduct comprehensive reviews to assess the response and systematically capture lessons learned. These insights are internalized to drive continuous improvement in emergency processes and strengthen organizational resilience.

Promote collaboration among different stakeholders

To ensure the long-term success of climate adaptation efforts, sustained collaboration is essential. The implementation of many planned actions depends on strong, lasting partnerships with a broad spectrum of stakeholders, including regulatory bodies, local and regional governments, civil defence, public safety agencies, and society at large. Some examples are highlighted:

Regulatory engagement

In South America, EDP is part of a R&D initiative that fosters sector-wide collaboration with other energy companies. The project researches global climate resilience best practices, aiming to adapt them to the Brazilian context. This effort aims to contribute to the Brazilian regulatory agenda by recommending enhancements to the existing framework—encouraging investment in resilience and enabling a more robust response to extreme weather events.

Partnering with Academia

EDP has established a strong collaborative relationship with academic institutions to support its climate adaptation initiatives, namely with with FEUP (*Faculdade de Engenharia da Universidade do Porto*), IST (*Instituto Superior Técnico*), and FCUL (*Faculdade de Ciências da Universidade de Lisboa*):

- In hydro generation, these partnerships have led to the development of an in-house hydrological forecasting system that integrates climate projections to optimize water resource management and hydroelectric production. For detailed information, see page 36.
- In electricity distribution, EDP worked with academia to create a climate risk quantification tool that assesses the vulnerability of network assets to extreme weather events. This science-based tool applies downscaled climate scenarios and machine learning techniques to support investment planning and infrastructure resilience. For detailed information, see page 37.

These partnerships have enabled EDP to incorporate cutting-edge research into operational decision-making, reinforcing its capacity to anticipate and respond to climate risks.

Local stakeholders' engagement

Facilities that pose potential risks to people or property are required to have emergency and contingency plans in place.

For hydropower plants, these plans may involve reducing electricity generation and reassessing water use during extreme droughts. To address the growing impact of such events, EDP has reinforced its participation in water resource management forums—especially in vulnerable regions like the Tagus and Douro basins—where stakeholders coordinate actions such as reservoir management, ecological flow standards, and mitigation measures.

For electricity networks, contingency plans emphasize coordination with local authorities and civil protection agencies. Emergency drills, such as dam siren tests conducted with local stakeholders, help familiarize communities with alert systems and reinforce preparedness. These exercises, supported by public awareness campaigns, are carried out in collaboration with emergency services and regional authorities.

Together, these efforts strengthen EDP’s resilience and help minimize the environmental and operational impacts of drought.

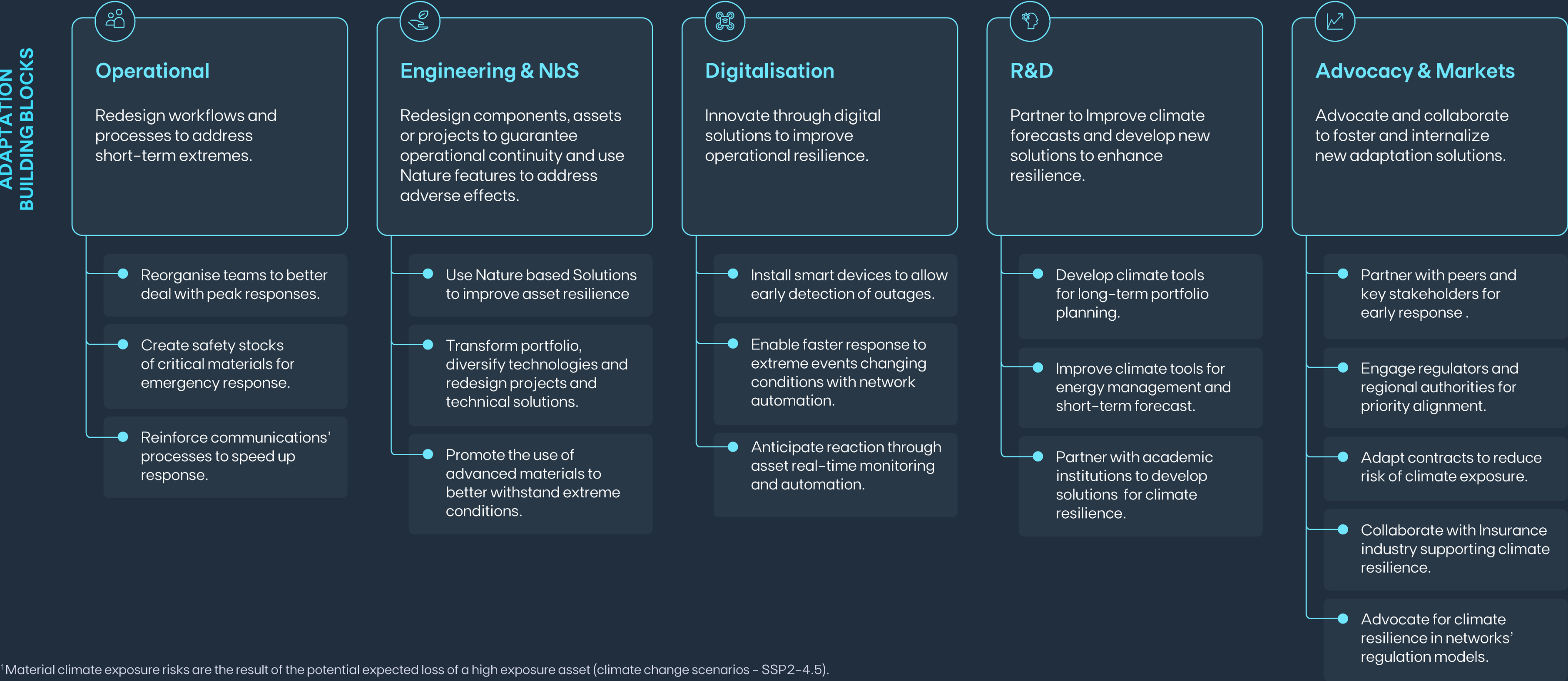
EDP Policy Asks:

Anticipation, innovation, and the ability to recover quickly need to be pillars of competitiveness and sustainability in the coming years. However, long-term climate resilience of companies will not be achieved alone:

- **Collaborative and systemic approaches are essential:** solutions are complex and depend of many players, demanding the involvement of local authorities, civil protection, insurance companies, businesses, academia, the financial sector, and civil society.
- **Science must be supported,** to continuously evolve our knowledge and enable more informed, effective decision-making.
- **National Adaptation Plans (NAPs) need to be actionable, time-bound and participative,** with clearly identified financial resources. NAPs will play a crucial role in guiding and defining companies' strategies and actions.

EDP’s commitment by 2028

➤ Infrastructure exposed to material climate risks¹ are covered by Climate Adaptation Plans



04

Approaching climate adaptation



4.1. Governance model	22
4.2. Climate risks assessment	22
4.3. Climate change impacts	23



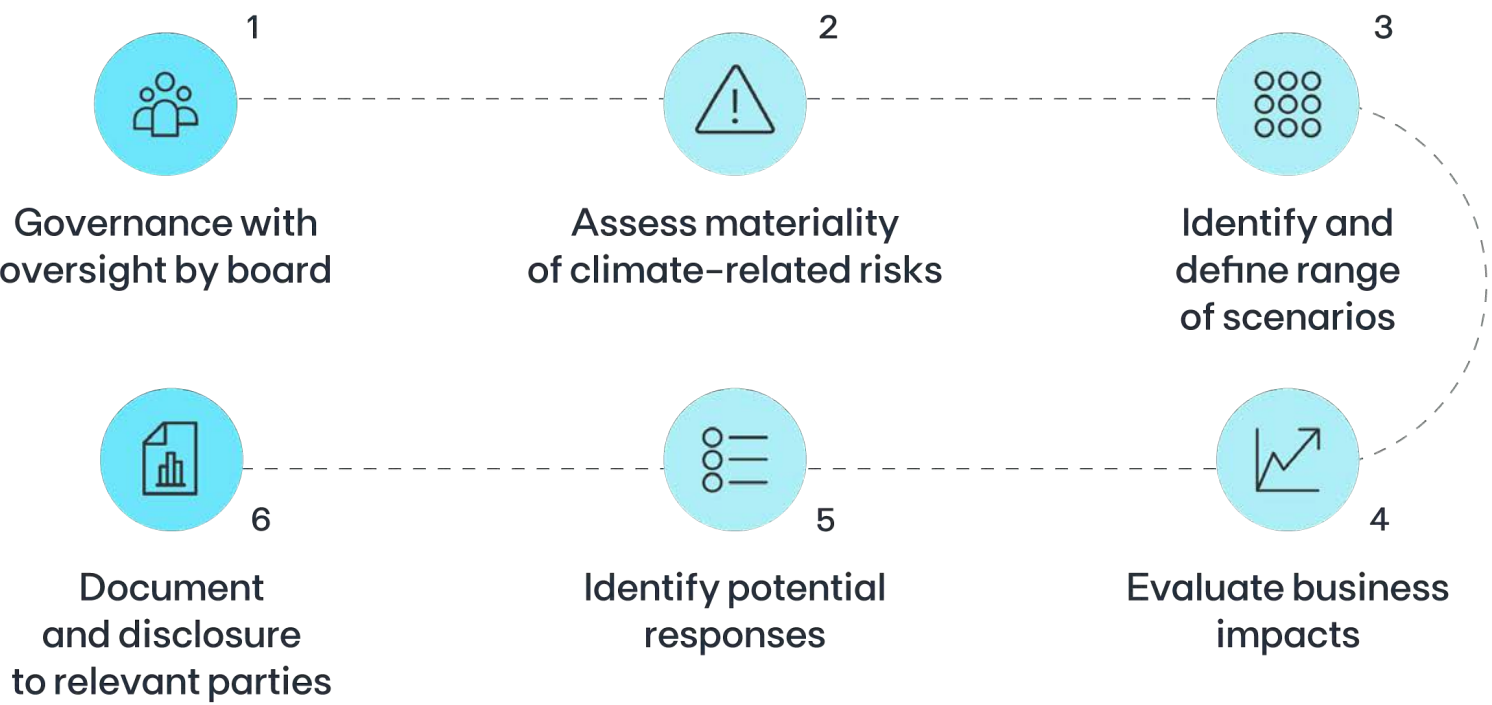
Approaching climate adaptation

At EDP, climate adaptation means integrating knowledge and practices that enhance the company’s ability to prevent, respond to, and repair damage caused by climate change. It also involves identifying opportunities that may arise from such events, actively contributing to business resilience.

Embedding climate adaptation into daily operations requires structured internal processes and a solid governance model to ensure both strategic resilience and operational efficiency.

To support this, EDP has implemented a climate risk assessment and quantification process aligned with the Task Force on Climate-related Financial Disclosures (TCFD) recommendations. Anticipated changes in physical climate variables are addressed through operational adaptation plans, enabling a proactive and informed response to evolving risks.

Main steps for Climate-Risk Assessment:



Adapted from TCFD process in technical supplement: The Use of Scenario Analysis in Disclosure of Climate-Related Risks and Opportunities

4.1. Governance model

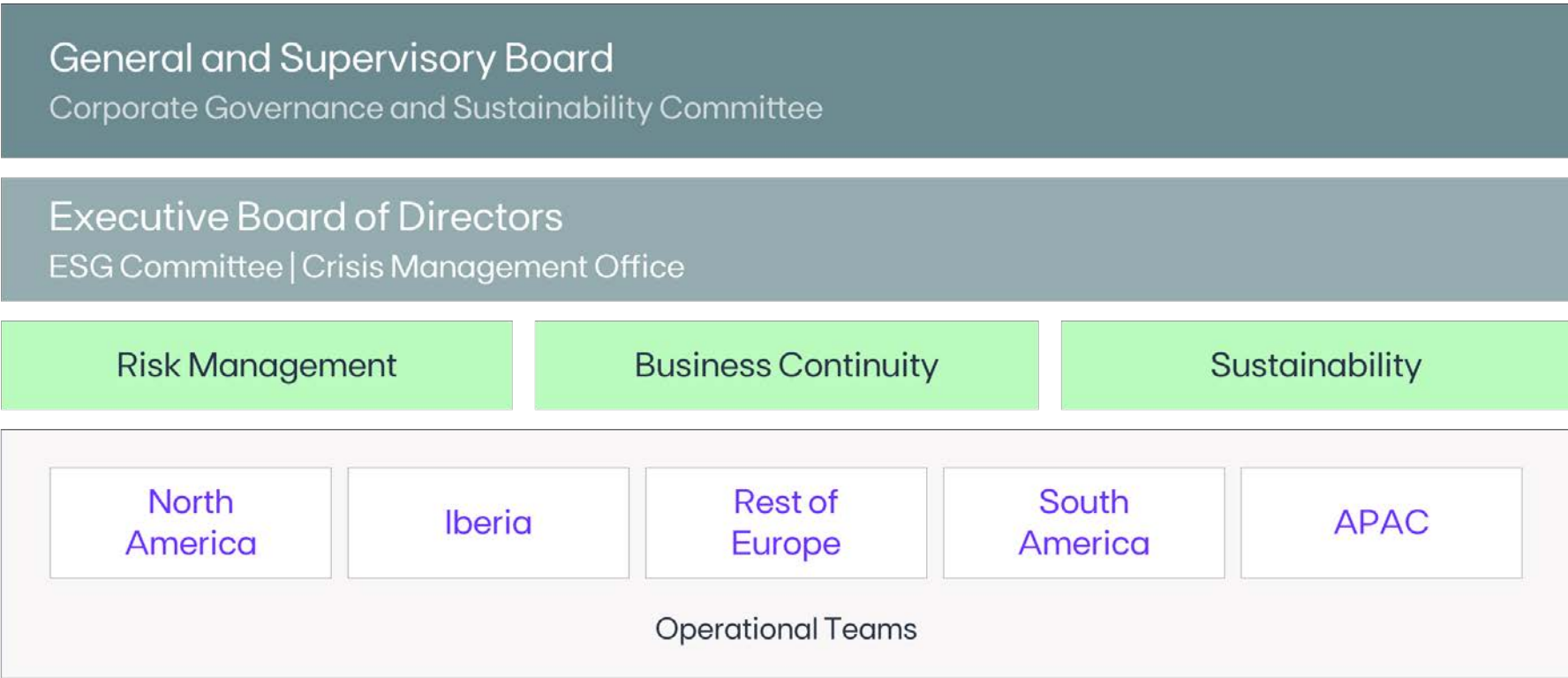
EDP’s climate change adaptation governance model is aligned with its broader sustainability governance framework, ensuring a resilient climate strategy, effective implementation, and efficient performance monitoring, with the Risk and Business Continuity areas playing an active role in this process.

Oversight of the climate strategy is provided by the General and Supervisory Board through the Corporate Governance and Sustainability Committee, which regularly engages with the Executive Board of Directors on ESG matters, with climate being a top priority.

The strategy itself is developed by the IR & ESG team, with the Global Risk Office conducting comprehensive climate risk assessments, and the Business Continuity team ensuring the existence of robust response and recovery plans for Climate-related disruptions.

At the operational level, each business unit—across technologies and regions—is responsible for implementing climate adaptation measures tailored to their specific geographic contexts.

Further details on EDP’s climate governance strategy can be found in EDP's [Climate Transition Plan](#).



4.2 Climate risk assessment

EDP implements a global risk management process that acknowledges the diversity of its businesses and activities. This process includes climate change risk assessment in accordance with TCFD recommendations and framework.

The assessment concentrates on both existing assets and the future portfolio, recognizing that new assets may have a useful life extending over several decades. The analysis accounts for physical risks (both acute and chronic) and transition risks, and is undertaken as periodical dedicated process encompassing the several businesses and geographies where the EDP Group has significant and consolidated turnover.

For climate adaptation, EDP places significant emphasis on analysing physical risks due to the long-term nature of these challenges.

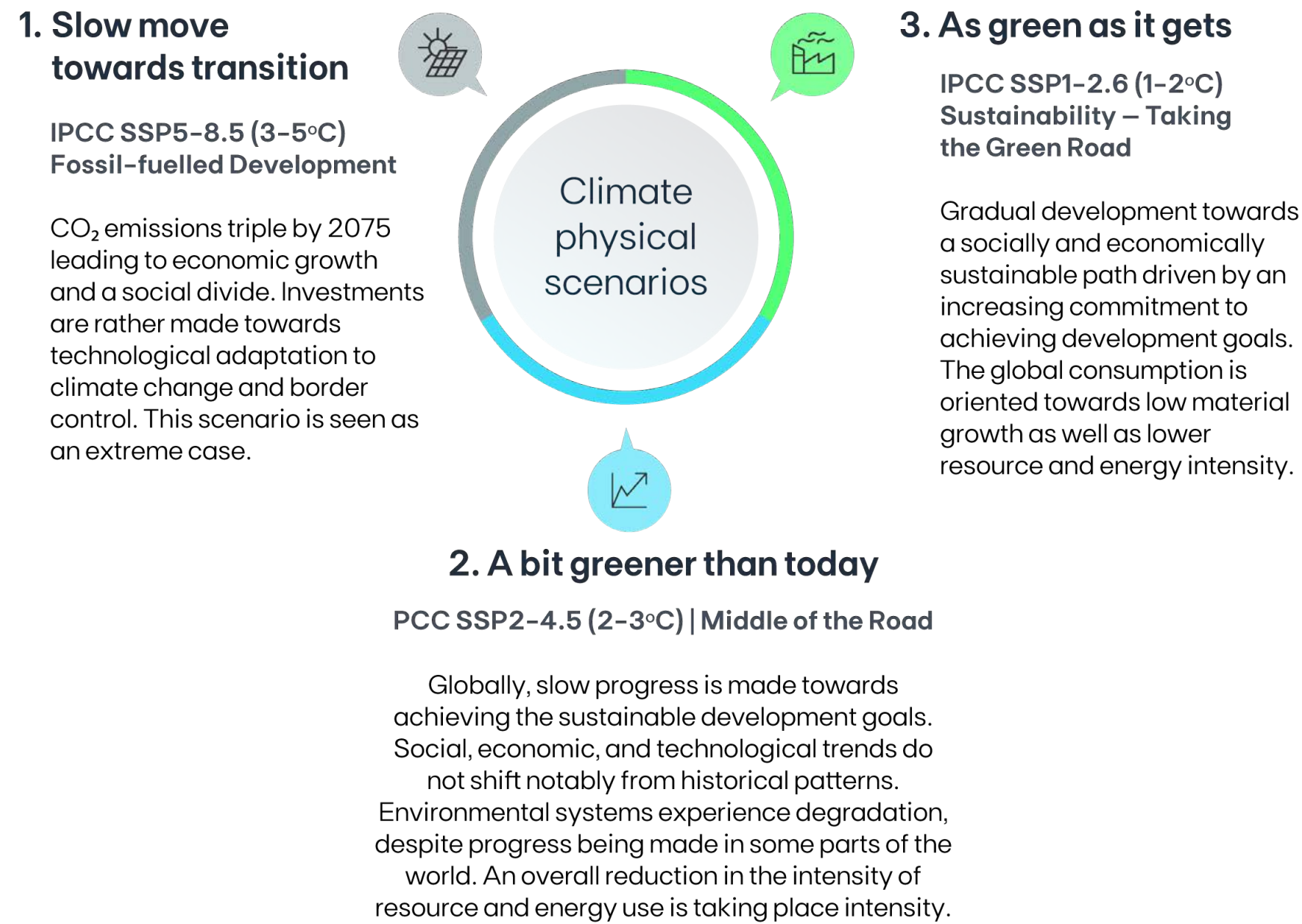
The physical risks are examined under three different climate scenarios (IPCC SSP1–2.6, IPCC SSP2–4.5, and IPCC SSP5–8.5) covering the periods of 2030 and 2050. By focusing on these timeframes, EDP recognizes that the impact of physical climate variables, such as changes in temperature, precipitation patterns, and the frequency of extreme weather events, becomes more pronounced in the mid and long term.

This comprehensive analysis allows EDP to develop robust strategies to mitigate adverse impacts and leverage potential opportunities associated with evolving climatic conditions.

The process includes the following steps:

- **Review of internal climate taxonomy:** based on TCFD recommendations and aligned with the corporate risk management taxonomy.
- **Definition of climate scenarios:** aggregation of physical and transition scenarios, defining their main variables and associated narratives.
- **Definition of risk variables:** estimation of risk parameters by scenario.
- **Quantification of risks and opportunities:** assess the potential financial, environmental, and social impacts of climate change and climate-related policies on assets, operations, and markets.
- **Consolidation and Climate Loss estimation:** data aggregation from the different businesses/ geographies to quantify the potential climate loss associated with climate-related events.

Climate physical scenarios considered:



Physical risks disaggregated at technology/ activity level for medium–long term (2030–2050):

	RISK	POTENTIAL BUSINESS IMPACT	HYDRO GENERATION	WIND AND SOLAR GENERATION	TRANSMISSION AND DISTRIBUTION	CLIENT SOLUTIONS
Chronic	Temperature increases	• Increase in refrigeration and maintenance costs • Rise of energy peaks/losses • Decrease in quality of service	Portugal		Iberia + Brazil	
	Sea level rises	• Damage to physical assets • Operations interruption	Iberia		Iberia	Iberia
	Water availability	• Loss of efficiency • Reduction of river basins • Share of water competitive use	Iberia + Brazil			
	Wind availability	• Operations interruption • Loss of efficiency • Increased operations costs		Global		
Acute	Extreme wind/rain	• Delays in assets construction • Damage to physical assets • Operations/sourcing interruption • Loss of efficiency • Resources variability • Rise in accidents	Iberia	Mainly USA	Iberia Brazil	Iberia + Brazil
	Extreme wildfires	• Delays in assets construction • Damage to physical assets • Operations/sourcing interruption • Rise in accidents	Iberia	Mainly USA	Portugal + Brazil	Iberia + Brazil
	Extremely hot days	• Increase in refrigeration and maintenance costs • Decrease in quality of service	Iberia	Global	Iberia	Iberia
	Extremely cold days	• Increase in refrigeration and maintenance costs • Decrease in quality of service		Mainly USA	Spain	Iberia

Exposed to risk, with relevant impact

Exposed to risk, with no relevant impact

Not applicable or negligible to the business workstream

05

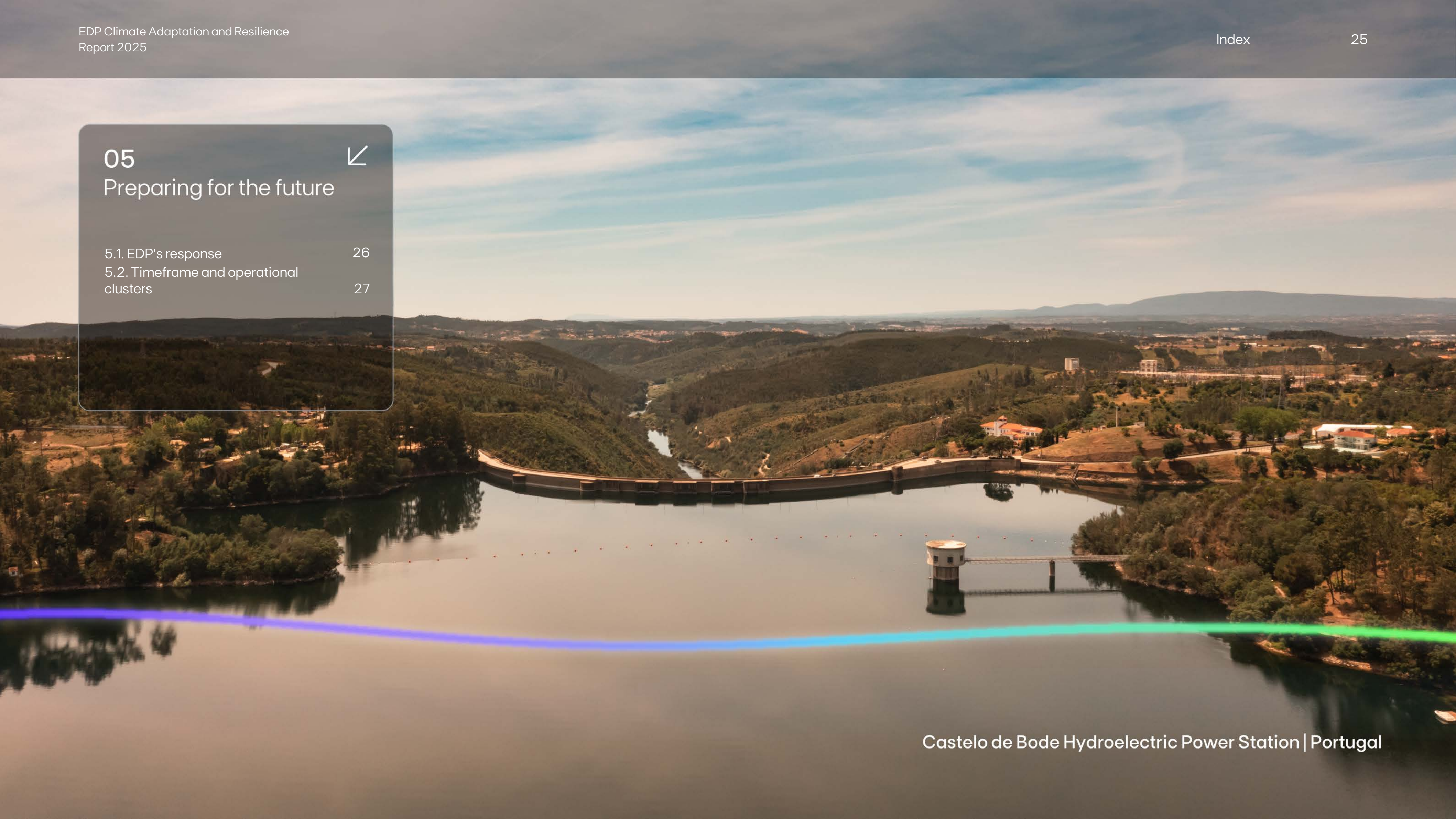
Preparing for the future

5.1. EDP's response

26

5.2. Timeframe and operational clusters

27



Castelo de Bode Hydroelectric Power Station | Portugal



Preparing for the future

5.1 EDP’s Response

A planned, risk-informed approach guides the prioritisation of adaptation measures—from strategic decisions to initiatives at the asset level.

For each identified material risk and potential impact, actions range from strengthening monitoring tools and forecasting capabilities to modernising or redesigning infrastructures to withstand future climate conditions. These responses are shaped both by experience and by the continuous search for innovative, forward-looking solutions.

Investing in resilience during the planning and design phase of new projects is significantly more cost-effective than retrofitting assets after climate impacts have already occurred. The most cost-effective moment to implement resiliency measures is during new construction, with cost-benefit ratios estimated between 1:4 and 1:16¹. These benefits reflect avoided losses such as casualties, property damage, operational disruptions, emergency response costs, and insurance expenses. Therefore, early integration of climate risk assessments is a key component of EDP’s decision-making.

Internal practices

A set of internal practices are being implemented across EDP Group and clustered according to EDP’s approach to Adaptation, considering:

- Time-response approach:** implementation timing and contribution to asset resilience.
- EDP's adaptation building blocks:** solutions’ expertise and focus on the type of intervention—structural, technological, or procedural—and the needed resources.

Together, these two categories provide a comprehensive framework for assessing, planning and implementing climate adaptation actions tailored to different contexts and types of infrastructure.

¹2025 Climate and Catastrophe Insight report, Aon.

Timeframe and operational clusters

TIME-RESPONSE
APPROACH



Preparedness

Implementing forecasting and early warning systems for extreme events.

By knowing in advance of the coming extreme event, measures or procedures can be put in place that will help to reduce the climate impact.



Planning & Prevention

Avoiding the occurrence of impacts on infrastructure.

Implementation of preventive measures to eliminate the impact of adverse climate effects, strengthening the resilience of the portfolio through proactive planning.



Response

Reducing the impacts of extreme events after they occur.

Contingency measures, training and exercises for critical events, and alternative resources are available to support and reduce the overall impact.



Recovery

Rebuilding infrastructure after the occurrence of extreme events.

Modifications implemented to limit the adverse effects of climate extreme events, but also to build back better, influencing resilience through adaptation building blocks.



Resilience

Enhancing the long-term ability of infrastructure to withstand climate impacts.

Structural changes to guarantee long-term resilience and the portfolio's ability to withstand adverse climate effects.

ADAPTATION
BUILDING BLOCKS



Operational

Ability to reorganise teams and workflows to enable a more agile response to extreme events and short-term incidents, without modifying assets, thereby reducing their impact.



Engineering & NbS

Physical modification of assets and integration of Nature-Based Solutions, with the aim of improving their resilience to future adverse effects. For new assets, climate risks are addressed during the design phase.



Digitalisation

Digital solutions enables better monitoring, predictive capabilities, and more efficient responses to climate-related impacts, such as early detection of incidents and immediate application of mitigation measures.



R&D

Collaborative initiatives with public and private stakeholders — particularly academic institutions — enable the identification and implementation of innovative solutions to strengthen resilience.



Advocacy & Markets

Collaborate with key stakeholders to design and implement new adaptation solutions, adopting an opportunity-driven approach to anticipate and reduce strategic climate risks.

Designing for resilience: how engineering decisions protected Valencia

Risk addressed	Type of measure (pg. 25)
Flooding	Resilience Engineering
Geography	Spain
Business activity	Distribution Networks

EDP in Spain has a distribution area in the region of Valencia with around 1.900 supply points and 126 MVA of installed capacity. This distribution network is located in an area with a high risk of flooding and had a single connection point to the transmission grid at the Quart Substation.

As part of its climate adaptation plans, EDP built the Aldaia substation to strengthen the resilience of the distribution network, ensuring an alternative supply in case of loss of the Quart connection.

In the construction of Aldaia Substation, flood risk was explicitly considered: the ground was raised to minimise exposure, preventing severe damage to assets and avoiding potential disruption of supply to customers.

A total of €5 million was invested in the new substation, including €123,000 in earthworks to mitigate flood risk.



Main results

During the unfortunate floodings in October 2024, the connection to the transmission grid at the Quart substation was lost. The Aldaia substation withstood the flooding and allowed most supplies to be restored almost immediately.

Next Steps

Similar practices will be applied in the construction of new assets that need to be built in areas of high flood risk.

Strengthening the resistance of wind turbines to extreme temperatures

Risk addressed	Type of measure (pg. 25)
Extreme temperatures	 Resilience  Engineering
Geography	North America
Business activity	Wind

Wind turbines operate across a wide range of environments, from high heat to intense cold. But these temperature extremes can compromise performance, reduce efficiency, and increase the risk of mechanical failure. In hot climates, overheating—particularly in the nacelle—can lead to downtime or reduced output. In colder regions, low temperatures can affect lubrication systems and electronic components.

To improve turbine performance, modern technology is continuously improving their ability to perform reliably under these conditions. Upgrades were made to cooling systems, enabling efficient operation during high-temperature events. In colder locations, thermal insulation (vent covers) were installed in the nacelle to protect sensitive components and maintain optimal operating conditions, and heater blankets are installed on the hydraulic units to keep the hydraulic oil in a normal operating temperature range.

These interventions required a moderate capital investment (CAPEX), primarily allocated to retrofitting existing turbines and integrating enhanced thermal management systems into new installations. The measure leverages existing infrastructure while improving operational reliability across a broader range of climatic conditions.



Main results

These measures have reduced the frequency of temperature-related shutdowns, extended equipment lifespan, and improved energy output consistency. This translates into lower maintenance costs, fewer production losses, and increased asset resilience.

Next Steps

Extend this adaptation measure to other wind farms operating in regions with high thermal variability and incorporate it into standard guidelines for projects exposed to extreme temperatures.

Sustainable power in times of water scarcity: low-impact solutions

Risk adressed	Type of measure (pg. 25)
Drought	Resilience Engineering
Geography	Iberia
Business activity	Hydro generation

Today, hydro power plants are subjected to environmental requirements, such as maintaining ecological flows. While these flows ensure healthy conditions for downstream ecosystems, they also represent a missed opportunity for electricity generation. These flows are so low that power plants are usually unable to generate energy, wasting a scarce and valuable resource such as water.

To address this challenge, EDP has installed the first hydroscrew in Pilotuerto power plant (Spain), based on the Archimedes Screw technology with a power of 700 kW. Located directly above the water, hollow cylinders rotate at a slow speed, using the natural force of water to produce electric energy. Among its virtues are the easy implementation and its lack of environmental impact, being fish-friendly.

Another way of facing this problem is through the modernisation of existing groups. In La Barca (Spain), and in Castelo do Bode (Portugal) it was possible to reduce the minimum power output so that it allows to generate energy with the minimum ecological flow. Another type of action was carried out in Venda Nova (Portugal), where a turbine was added to the ecological flow release device, enabling the use of water discharged into the watercourse without being used.

EDP has made a total investment of 9 million euros in these power plants, making it possible to generate energy even in severe drought conditions, in compliance with environmental requirements.



Main results

Modifying existing power plants, using different technologies, production can be increased by up to 5% using the previously wasted scarce water resource.

Next Steps

Similar modifications using conventional or innovative solutions in other hydro power plants are being carried out in Portugal and Spain.

Using new materials to better address extreme events

Risk addressed	Type of measure (pg. 25)
Extreme winds	 Resilience  Engineering
Geography	Brazil
Business activity	Distribution networks

To address growing climate stressors—such as heavy rain, strong winds, high humidity, and corrosion, especially in coastal and rural areas—EDP implemented infrastructure upgrades to enhance network resilience.

Traditional materials, vulnerable to degradation from moisture, wind, and corrosion, are being replaced in critical areas by more durable alternatives. Concrete poles were substituted with fiberglass ones, and wooden crossarms with polymeric models, which can last three times longer than traditional fiber and wood materials.

These upgrades aims to improve the speed of network repairs in areas with restricted access for heavy vehicles, and reduce failure rates under extreme weather. The lower maintenance needs, extended life span, and the increased climate resistance delivers long-term operational savings, reinforcing the network’s climate resilience.



Main results

The initiative improved network reliability and efficiency, reduced maintenance needs, enhanced safety during extreme weather, and extended equipment lifespan.

Next Steps

Expand the use of fibreglass and polymeric materials in other high-risk areas, with ongoing evaluations to drive improvement and cost efficiency.

Mitigating wildfire risks using nature based-solutions

Risk addressed	Type of measure (pg. 25)
Wildfires	 Resilience  Nature-based solution
Geography	Portugal
Business activity	Distribution networks

Networks in Portugal operates 68 000km of high and medium voltage, with a significant percentage in forested areas exposed to wildfires, worsened by climate change.

In partnership with ForestWise, compatible land uses are being tested to reduce fire risk and create local value, even if they differ from standard legal prescriptions.

The goal is to identify low-flammability species that ensure safety, support biodiversity and ecosystem services, and offer socio-economic benefits. The partnership enabled the selection of 107 species based on ecological, legal, and economic criteria.

This measure addresses climate risks like heat, extreme precipitation, wind, and fire through vegetation that cools, retains water, and stabilizes soil. The study identified 43,000 ha with this potential.

Current management covers 19,500 ha/year, with 17M€/year in CAPEX, supported by tailored management models.



Main results

Tailored management models were developed for all Portuguese municipalities and integrated into regional planning tools, and a digital platform was developed to guide implementation and species selection.

Next Steps

Implement pilot projects under the Iberian Climate Resilience Plan and promote scalability through stakeholder engagement.

Reducing power outages originated by high density vegetation areas

Risk addressed	Type of measure (pg. 25)
Storms, extreme wind and precipitation	Resilience Engineering
Geography	Brazil
Business activity	Distribution networks

EDP Brazil manages over 27,000 km of power lines, serving 3.9 million customers in São Paulo and Espírito Santo, where extreme weather is an increasing challenge.

In densely vegetated areas, such events raise outage risks. To address this, EDP is deploying compact networks—distribution systems with insulated conductors and reduced spacing—to reduce vegetation-related interventions and prevent service disruptions.

This solution improves reliability, especially during storms with strong winds and heavy rain. The operations team identifies high-risk areas and informs the expansion planning team, which assesses feasibility.

In 2024, EDP invested R\$54.4 million in CAPEX to implement this solution, reinforcing its commitment to a more resilient and efficient energy infrastructure.



Main results

The positive reflex in service continuity indexes, is perceived in regions where the technology is adopted.

Next Steps

This solution is an established process and is being scaled up according to the technical possibilities and resources availability.

Protecting hydropower from debris and extreme events

Risk addressed	Type of measure (pg. 25)
Flooding, wildfires	 Resilience
	 Engineering
Geography	Portugal
Business activity	Hydro generation

More frequent intense rainfall and wildfires are increasing the volume of woody debris—such as branches and tree trunks—reaching hydroelectric power station intakes, particularly in run-of-river dams with shallow and high-flow conditions. This leads to overloading of protection systems and, in some cases, obstruction of intake grids, posing serious operational risks.

The main goal of this measure was to assess and reinforce the systems for retaining and cleaning woody material and aquatic vegetation, ensuring greater resilience of hydro infrastructure to extreme weather events.

The adaptation involved site-specific studies and targeted actions: reinforcing intake protection with additional buoys in the Douro basin (Pocinho, Valeira, Régua, Carrapatelo), automating cranes and installing a second net in Touvedo (Lima basin), and improving tailrace cranes in Belver and Fratel (Tejo basin).

From 2022 to 2026, the planned investment in these actions, most of which have already been implemented, amounts to €3.5 million.



Main results

Improved protection of hydro plants against woody debris inflows, reducing blockages and load losses. Enhanced intake systems and crane performance increased operational efficiency and climate resilience.

Next Steps

Replacement of the tailrace cranes at Pocinho (2025), Crestuma (2026), and Valeira (2026) is scheduled as part of the upcoming infrastructure upgrade plan.

Improving land resistance to the erosive effects of torrential rains

Risk addressed	Type of measure (pg. 25)
Landslide	Planning and Prevention Nature-based solution
Geography	Spain
Business activity	Distribution networks, Hydro generation

EDP’s assets are often located in areas degraded by forest fires or drought, where vegetation is scarce and the topsoil has become unstable. These conditions leave the land highly vulnerable to extreme rainfall events, which can trigger landslides and cause significant damage to infrastructure —such as reducing reservoir capacity or toppling overhead line supports.

To mitigate these risks, native trees are being planted on these degraded lands. This reforestation effort aims to stabilize the soil, reducing erosion caused by runoff during heavy rains and minimizing the impact on EDP’s assets.Two actions have been carried out in the Principality of Asturias:

- i. The first action involved planting 28,000 *Betula celtiberica* across 24 ha near the Tanes reservoir with an investment of €75k.
- ii. The second covered 10 ha near overhead lines in Quirós, with 11,000 specimens planted and €55k invested.



Main results

The planting will enhance the soil’s resistance to the erosive effects of torrential rain, helping to preserve reservoir capacity and maintain the stability of overhead line supports, which could otherwise be compromised by landslides.

Next Steps

Following this project, EDP is using an internal risk tool to identify landslide risks and to continue exploring the use of Nature-based Solutions (NbS) as mitigation measures.

Forecasting the future: Water Board for climate-resilient hydropower

Risk addressed	Type of measure (pg. 25)
Flooding, rainfall variability, drought, reduced water availability	 Planning and Prevention  Digitalisation
Geography	Portugal
Business activity	Hydro generation

Portugal is highly exposed to climate change, facing less rainfall and more frequent extreme weather events. These conditions increase pressure on water resources, making climate and hydrological forecasting essential for managing reservoirs and optimizing hydropower. In response, EDP developed the Water Board platform, aiming to enhance the role of climate and hydrological forecasts in hydroelectric operations.

This tool aims to optimize energy production, improve dam safety, support downstream water use, guide long-term investments, and improve budgeting through reliable forecasts.

Water Board is a fully automated, in-house hydrological forecasting system that provides daily flow forecasts for its main hydro assets in Portugal. The system runs daily, supporting short to long term water inflow predictions, as well as climate change projections. It required a CAPEX of €0.5 million and 4,100 internal labour hours in 2024.

To ensure robust science and forecasting, Water Board was developed in collaboration with key stakeholders: academia – Faculdade de Engenharia do Porto (FEUP), Instituto Superior Técnico (IST), Faculdade de Ciências da Universidade de Lisboa (FCUL) – meteorological institutions (IPMA, ECMWF) and private partners (Tomorrow.io, Salient).



Main results

The Water Board helps EDP forecast river inflows and assess climate change impacts on hydropower across different time horizons, improving dam safety, energy efficiency, budget accuracy and water resource management through accurate AI-based forecasts.

Next Steps

Extend the Water Board to all hydro assets, evaluate the group's weather forecast suppliers and improve the analysis of forecasts in collaboration with the main users.

Building climate resilience into networks’ planning

Risk addressed	Type of measure (pg. 25)
Extreme wind, wildfires, flooding, extreme cold	Planning and Prevention R&D
Geography	Portugal
Business activity	Distribution networks

Networks business is addressing risks from extreme weather most material to this technology.

In collaboration with academia, a science-based approach was considered aiming to integrate climate risk into network planning.

A risk assessment tool was created to map hazard, exposure, and vulnerability of distribution assets, helping prioritize investments in more resilient infrastructure. With a 175k€ investment, this tool targets wind, wildfire, and flood risks and supports the 2026–2030 Networks plan in Portugal, where 17% of funds go to resilience and 45% to modernization. Key actions include vegetation management, undergrounding, smart grids, and emergency systems.

The project used data from ANEPC (National Authority for Emergency and Civil Protection), ICNF (Institute for Nature Conservation and Forests), IPMA (Portuguese Institute for Sea and Atmosphere), and EURO-CORDEX, and engaged key national stakeholders to ensure scientific and strategic alignment.



Main results

The tool enabled climate risk mapping, supporting investment planning with a science-based approach. It defined adaptation measures, integrated risk into decision models, and strengthened the resilience strategy for Iberia Networks.

Next Steps

Expansion to Spain, integration into planning systems, and selection of measures based on cost-benefit and risk prioritization.

AI-powered planning: strengthening networks against extreme weather

Risk addressed	Type of measure (pg. 25)
Storms, extreme wind and precipitation	Planning and Prevention R&D
Geography	Brazil
Business activity	Distribution networks

Extreme weather events in Brazil, like storms with strong winds and heavy rain, are increasingly disrupting electricity distribution. To address this, EDP developed a data-driven decision support system that enhances the resilience of medium-voltage networks - Protheus. This system empowers planning teams to make strategic decisions by considering climate and operational risks, ensuring service continuity.

It tackles issues like tree falls, conductor breakage, and equipment failures caused by severe storms. Using AI, optimization algorithms, and operational data, Protheus recommends optimal placements for reclosers, sectionalizing points, and network improvements.

Already deployed across EDP's entire medium-voltage grid, it was developed through an ANEEL-regulated R&D program without major additional CAPEX. The system also integrates historical fault data and environmental variables for smarter planning.



Main results

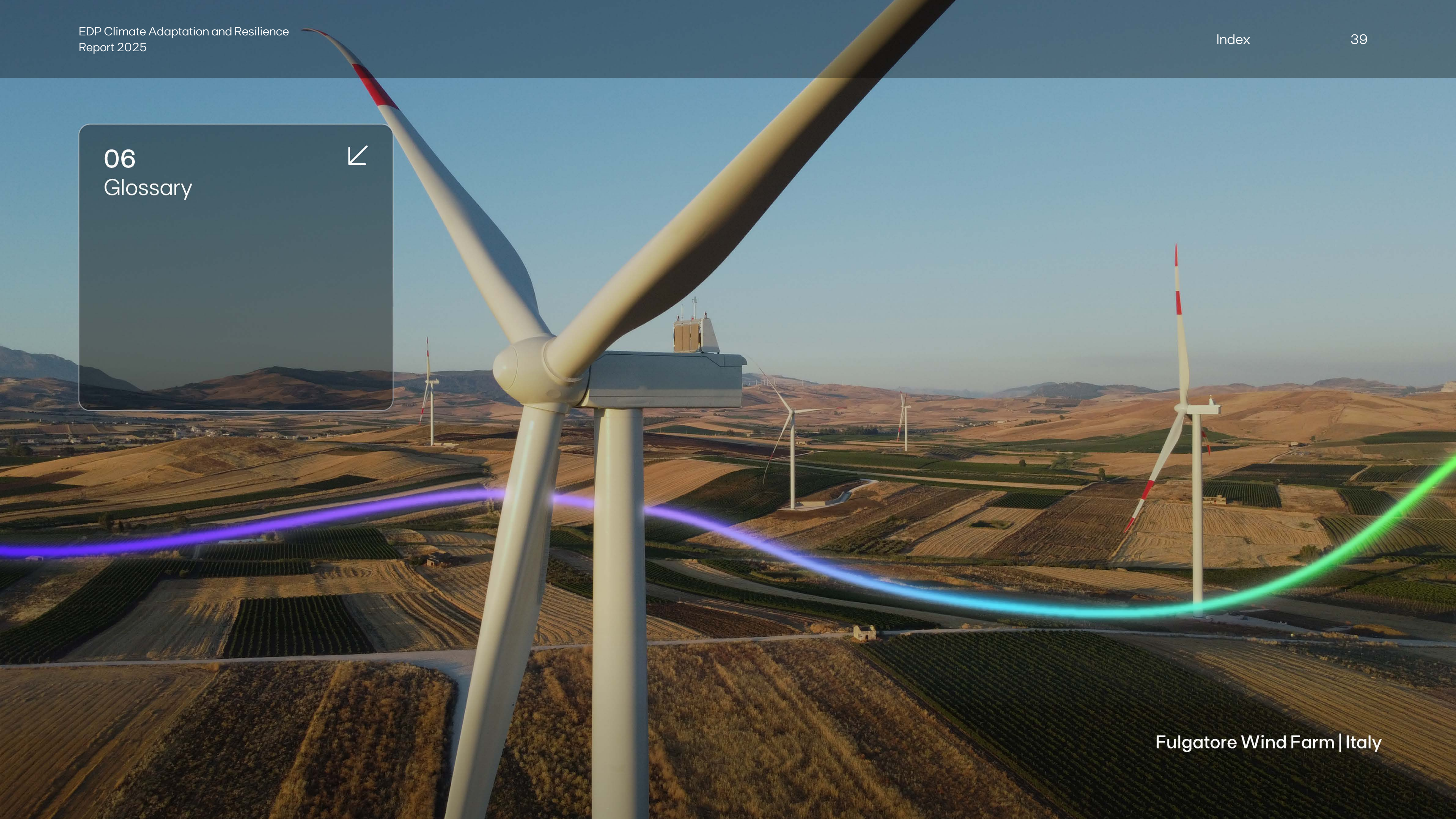
Full implementation across EDP's medium-voltage network in 2025, initial results show improved accuracy in investment prioritization and enhanced resilience in critical areas.

Next Steps

Planned next steps include incorporating feedback from technical teams and adding new environmental and operational data sources to improve predictive capabilities.

06
Glossary

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Fulgatore Wind Farm | Italy

Glossary

Acute physical risks

Event-driven risks resulting from the increased severity and frequency of extreme weather events, such as cyclones, hurricanes, or floods. TCFD, Final Report: Recommendations of the TCFD, 2017.

Adaptation measures

Actions or interventions implemented to reduce vulnerability to the impacts of climate change, aiming to minimize damage or take advantage of emerging opportunities. Adaptation measures may include modifications to infrastructure, management of natural resources, changes in production systems, public policies, and social strategies. IPCC, 2014.

Climate change adaptation

Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. IPCC Fourth Assessment Report (AR4)

Climate physical risks

Potential for losses or disruptions caused by climate-related hazards, which can be either acute or chronic. TCFD, Final Report: Recommendations of the TCFD, 2017.

Climate transition risks

Risks related to the process of adjusting to a low-carbon economy. These risks may arise from policy and legal changes, technological shifts, market dynamics, reputational impacts, and changes in consumer preferences aimed at mitigating climate change or adapting to it. TCFD, Final Report: Recommendations of the TCFD, 2017.

Chronic physical risks

Longer-term shifts in climate patterns, such as sustained higher temperatures, rising sea levels, and changes in precipitation patterns. TCFD, Final Report: Recommendations of the TCFD, 2017.

GHG Emissions

Greenhouse gas (GHG) emissions refer to the release of gases that trap heat in the Earth’s atmosphere, contributing to the greenhouse effect and climate change. These emissions include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated gases. IPCC, 2018: Annex I: Glossary.

Nature-based Solutions

Actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits. IUCN.

Resilience

The capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure. IPCC Fifth Assessment Report (AR5).

