edpon

May 2023 I No. 66

Artistic intervention by Vhils as part of the EDP Art Reef project, the first underwater exhibition held on Portuguese maritime territory

Shaping the future
our vision

edpon

EDPON IS A QUARTERLY MAGAZINE
Owned by EDP – Energias de Portugal, SA
Av. 24 de Julho, 12, Torre Poente, Piso 5
1249-300 Lisbon, Portugal
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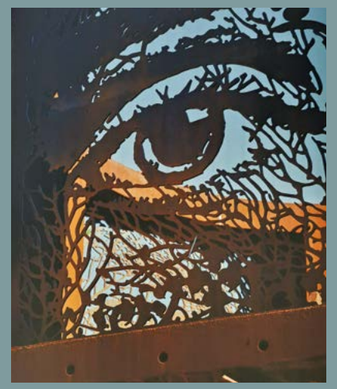

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A plan for tomorrow

In this new issue of our magazine, we invite you to take a closer look into EDP's 2023-26 Business Plan, which opens new perspectives and opportunities for the group and reinforces our strong commitment to the planet.

Climate change is one of the biggest challenges we are facing, and we cannot stand idly by. As a company, we have the responsibility to do our part to preserve the environment and ensure a sustainable future for the next generations.

The updated Business Plan anticipates our financial targets and accelerates investment in the energy transition by increasing EDP's global investment to 25 billion euros until 2026. It aims at creating long-term value to all our stakeholders, ensuring sustainable growth and ESG excellence, based on a future-proof organization.

Also, in this issue you will find not-to-be-missed interviews with two of today's most influential creatives, one in the field of architecture, the other in contemporary art. Alejandro Aravena, winner of the Pritzker prize, shares his insightful perspectives on design in the light of our new building of the headquarters in Lisbon. Alexandre Farto, the artist better known as Vhils, dives deeper into the first underwater exhibition held on Portuguese maritime territory co-produced with EDP.

As we continue to drive innovation in clean technologies, you will also find more about EDP's first wind and sun hybrid park in Iberia and about our largest solar complex in the world, located in Brazil.

All excellent reasons to read this new issue of our global magazine.

Hope you enjoy it!

by Miguel Stilwell d'Andrade
CEO, EDP Group

"Climate change is one of the biggest challenges we are facing, and we cannot stand idly by."

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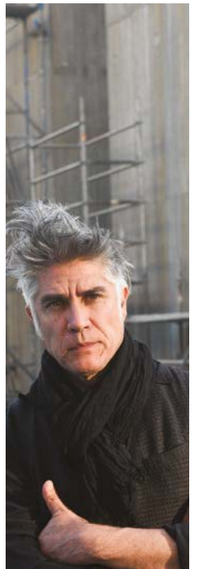

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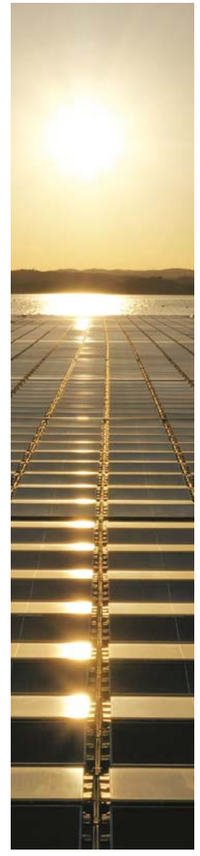

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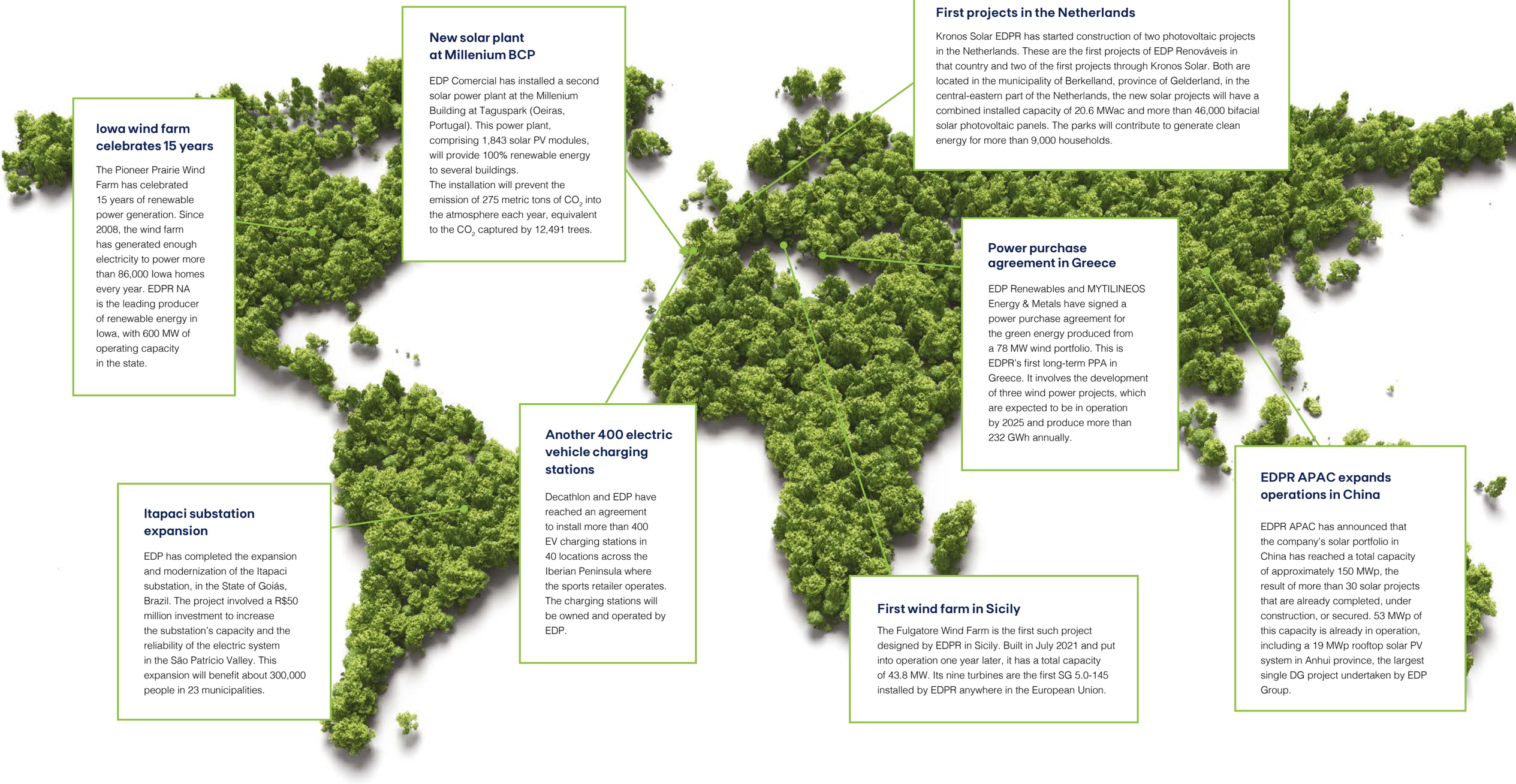


Iowa wind farm celebrates 15 years

The Pioneer Prairie Wind Farm has celebrated 15 years of renewable power generation. Since 2008, the wind farm has generated enough electricity to power more than 86,000 Iowa homes every year. EDPR NA is the leading producer of renewable energy in Iowa, with 600 MW of operating capacity in the state.

New solar plant at Millenium BCP

EDP Comercial has installed a second solar power plant at the Millenium Building at Taguspark (Oeiras, Portugal). This power plant, comprising 1,843 solar PV modules, will provide 100% renewable energy to several buildings.
The installation will prevent the emission of 275 metric tons of CO_2 into the atmosphere each year, equivalent to the CO_2 captured by 12,491 trees.

First projects in the Netherlands

Kronos Solar EDPR has started construction of two photovoltaic projects in the Netherlands. These are the first projects of EDP Renováveis in that country and two of the first projects through Kronos Solar. Both are located in the municipality of Berkelland, province of Gelderland, in the central-eastern part of the Netherlands, the new solar projects will have a combined installed capacity of 20.6 MWac and more than 46,000 bifacial solar photovoltaic panels. The parks will contribute to generate clean energy for more than 9,000 households.

Power purchase agreement in Greece

EDP Renewables and MYTILINEOS Energy & Metals have signed a power purchase agreement for the green energy produced from a 78 MW wind portfolio. This is EDPR's first long-term PPA in Greece. It involves the development of three wind power projects, which are expected to be in operation by 2025 and produce more than 232 GWh annually.

Itapaci substation expansion

EDP has completed the expansion and modernization of the Itapaci substation, in the State of Goiás, Brazil. The project involved a R$50 million investment to increase the substation's capacity and the reliability of the electric system in the São Patrício Valley. This expansion will benefit about 300,000 people in 23 municipalities.

Another 400 electric vehicle charging stations

Decathlon and EDP have reached an agreement to install more than 400 EV charging stations in 40 locations across the Iberian Peninsula where the sports retailer operates. The charging stations will be owned and operated by EDP.

First wind farm in Sicily

The Fulgatore Wind Farm is the first such project designed by EDPR in Sicily. Built in July 2021 and put into operation one year later, it has a total capacity of 43.8 MW. Its nine turbines are the first SG 5.0-145 installed by EDPR anywhere in the European Union.

EDPR APAC expands operations in China

EDPR APAC has announced that the company's solar portfolio in China has reached a total capacity of approximately 150 MWp, the result of more than 30 solar projects that are already completed, under construction, or secured. 53 MWp of this capacity is already in operation, including a 19 MWp rooftop solar PV system in Anhui province, the largest single DG project undertaken by EDP Group.

General Assembly 2023 approves all points

01

EDP's 2023 General Shareholders' Meeting, held in Lisbon on April 12, marked the end of Miguel Setas' mandate on the Executive Board of Directors (EBD) and EDP. The now former member of the EBD was replaced by Pedro Vasconcelos, member of the EDP Renováveis management team, leader of the company's platform in the Asia-Pacific region and member of the Board of Directors of EDP Innovation, EDP Ventures and Ocean Winds, who will take this role until the end of the current mandate (2021-2023).

The annual shareholders' meeting, which took place in a hybrid model, with presence in the auditorium of the headquarters in Lisbon and also through telematic means, approved the eight points under discussion, of which stands out the authorization granted to the EBD to proceed with a capital increase, the third in the history of the EDP Group.

.02

EDPR NA Misenheimer open house

Misenheimer, located in the village of Misenheimer in Stanly County, is EDPR NA's first project in the state of North Carolina. The Misenheimer open house aimed to inform the community about the project and provide information on its construction process. The event took place on March 1 in the Grady Boardroom of the Stokes Student Center at Pfeiffer University, a liberal arts college that has a strong presence in the town of Misenheimer. The university is an important stakeholder of the project, and throughout the solar park's development, EDPR NA's Development and Community Relations teams have met with and educated its students to the renewable energy sector and its dynamic career paths. In addition, the students also helped select the project's logo design, contributing impactful feedback that led to the mark's inclusion of railroad tracks and other imagery symbolic to the people of Misenheimer. Misenheimer Solar Park will bring significant economic benefits during construction and operations, with an estimated $27 million paid to landowners, approximately $3.5 million paid to local governments, an increase in money spent at local businesses, and job opportunities.

.03

EDP Group maintains compliance certifications

EDP Group was again recognized for the robustness of its compliance management practices, maintaining all certifications obtained in 2022.

Independent auditors have concluded that the compliance management system implemented at EDP, S.A. is effective, renewing our ISO 37301 certification. Our anti-bribery/anti-corruption management system has also been found to be in line with the requirements of standard ISO 37001. As a result, EDP S.A. and its subsidiaries EDP España, EDP Renewables, and EDP Brasil have retained their respective certifications. Similarly, EDP España and EDP Renewables saw the renewal of their UNE 19601 certifications on management systems for criminal compliance. These certifications are evidence of EDP Group's determination and effort to implement the best compliance practices, and bolster our commitment to promote a culture of compliance based on values like integrity, responsibility, and transparency.

.04

One of the world's most ethical companies

For the 12th consecutive year, the Ethisphere Institute has recognized EDP as one of the world's most ethical companies — the only Portuguese business to earn the distinction. This year, the survey looked into 135 companies from 19 countries and 46 sectors. EDP was one of nine businesses from the Energy & Utilities sector in the 2023 World's Most Ethical Companies.

A distinction that recognizes the way EDP has been operating in every market, always guided by the "EDP Code of Ethics." This code was revised at end of last year to better respond to current challenges, seeking to raise awareness among all employees to the importance of ethical behavior, every day and in everything they do.

.05

Lunar New Year celebrations

The Lunar New Year (also known as Chinese New Year or Spring Festival) is a significant festival commonly celebrated in households in the APAC region.

This year, the APAC office welcomed the Lunar New Year with Lion Dancing and some of the European workers had the chance to experience this aspect of Chinese culture for the very first time! In Chinese culture, the lion symbolizes power, wisdom, and superiority. People perform lion dances at Chinese festivals or big occasions to bring good fortune and chase away evil spirits. The lion dance is one of the most important traditions at Chinese New Year. Pedro Vasconcelos also had a hand at trying 'Lohei'. 'Lohei' is one of the biggest highlights during the Lunar New Year festivities, where families and friends come together to "toss up a good fortune". The dish that is tossed consist of a mixture of thinly sliced raw fish and shredded vegetables, seasonings, and condiments. Each ingredient symbolises well-wishing. With each added ingredient, an auspicious phrase is recited. Diners would then stand around the table, each with a pair of chopsticks to toss the mix while exchanging blessings. It is popularly believed that the higher the toss, the better one's prospects and fortune for the year ahead.

.06

EDP Generation participates in battery project in the Azores

EDP Generation joined the battery-based energy storage in isolated grids project promoted by EDA—Eletricidade dos Açores, as principal engineering consultant.
EDA's new storage and grid management system, inaugurated in March, is a pioneering infrastructure in Europe.
The innovative battery-based energy storage system on Terceira Island is a significant boost toward boosting the weight of renewable sources in the archipelago's energy mix and improving its energy autonomy. This new infrastructure has an installed capacity of 15 MW, distributed over 6 inverters, and an end-of-life storage capacity of 10.5 MWh.
The new system includes sophisticated microgrid management software that monitors the island's entire electrical system in real time. It also allows for more accurate estimates of energy production and consumption for different days and times, based on weather forecasts and historical data. This EDA project for Terceira Island, which involved an investment of €14 million, was developed by Siemens Portugal and Fluence and included the participation of other entities, such as EDP Labelec.
It is one of a portfolio of projects that EDA has underway, with the support of EDP Generation, aimed at equipping every island in the archipelago with this type of energy storage solution.

.07

EDPR APAC participated in two important conferences
In the last quarter of 2022, EDPR APAC participated in two key energy conferences in our markets with highest installed capacity, Singapore and Vietnam.
The Singapore International Energy Week (SIEW) is the region's leading event in the renewable energy sector comprising of affiliated conferences – SIEW, Asia Clean Energy Summit (ACES) and Future of the Grid (FOTG).
EDPR APAC was the Lead and Track Sponsor for ACES. We were involved in various clean energy tracks at several conferences and panels, marking our prominent presence in the industry. Pedro Vasconcelos, delivered a keynote speech on the opening day on ASEAN pathways to a net-zero emissions power sector by 2050 which talks about the impact on the power sector and whether the energy transition strategy is going to help or hinder the target in Southeast Asia. EDPR APAC top management also participated in panel discussions at the Solar and Storage Track at ACES, green financing and grid technology topics at the FOTG. We were present at the event with a 36 sqm exhibition booth with a brand-new look, vastly different from previous years with an institutional positioning namely through powerful brand visuals and videos in the form of projects showcase.
In Vietnam, EDPR APAC was present with a similar booth outlook at the Green Economy Forum and Exhibition (GEFE) in Ho Chi Minh, Vietnam.
The forum was organised by EuroCham which showcased European and Vietnamese technologies and innovations.

.08

EDP Innovation Immersion Program in Singapore
After global innovation hubs like San Francisco, Shanghai, Shenzhen, and Tel Aviv, EDP Innovation chose Singapore to host this 11th edition of its immersion program.
Welcoming 17 participants from 14 different EDP Group business units, Singapore proved to be the perfect place to share and learn about the solutions that will revolutionize our sector and accelerate the energy transition.
With a dynamic and interactive agenda, the EDP Innovation Immersion Program brought participants into close contact with numerous renowned entrepreneurs and academics, as well as several startups and cutting-edge tech companies, such as ST Engineering, Schneider Electric, PatSnap, and NCS Singtel.

Deputy Prime Minister's visit to EDPR APAC HQ office

09

On 24 February, EDPR APAC hosted the Deputy Prime Minister Mr Heng Swee Keat, Senior Minister of State Dr Koh Poh Koon and a group from the various Ministries to discuss about the company's purpose, competencies and ambition to lead the way to net-zero.
The visit comprised of a tour of the office with three special showcase on people development, digitalisation and innovation, and was a good opportunity to have open conversations about the energy sector, enhanced corporate and government collaboration and to reaffirm EDPR APAC's position to further shape the energy landscape in Singapore and the region.

.10

Innovative renewable energy solutions in Houston
With a mission to boost innovation and create new business and growth opportunities for startup companies with an interest in renewables, EDP Innovation collaborated with EDPR and EDPR NA to host startups from various countries at the Energy Starter Bootcamp for Renewable Energy and Green Hydrogen in Houston, the energy capital of the world and where EDPR NA's headquarters is located.
The startups demonstrated their presentations in front of a panel comprised of EDP, focusing on the two primary aspects – renewable energy sources (RES) and green hydrogen. They had a chance to engage in one-on-one sessions with EDP employees and received guidance to conduct their pilot programs.
This year's Bootcamp also welcomed back alumni startups from previous years, who shared stories of how the Bootcamp helped companies grow and how innovation is crucial to clean energy. //

EDP join global energy leaders at CERAWeek

From March 6 to 10, EDP participated in various forums and discussions with other leading energy companies at CERAWeek organized by S&P Global in Houston, Texas, United States.

The highly-anticipated conference brought together industry experts, policymakers, and innovators to discuss the latest developments in energy and the future of the industry.

EDP and EDPR CEO Miguel Stilwell participated in the “Global Power: Strategies for the Trilemma” forum. Miguel spoke in front of an audience of more than 2,000 executives on how global power and renewables companies are navigating the energy trilemma, balancing affordability and resilience of supply while growing low-carbon portfolios. The forum also explored strategies being used to achieve market objectives and enhance corporate profitability amidst shifting competition, policies, supply chains, and capital markets.

EDPR NA COO Sandhya Ganapathy was a key panelist in both the AGORA Innovation “Powering Data Centers with Clean Energy” and “Big Shovels: Supplying Minerals for the Energy Future” sessions. In the first session, Sandhya discussed the growing trend of data centers using renewable energy to power their operations as the demand for more data generated and stored online is increasing rapidly. During the latter plenary, Sandhya shared the challenges and opportunities associated with mining minerals – such as lithium, cobalt, and nickel – as the transition to renewable energy sources drives demand for minerals, posing challenges and potential delays in the adoption of low-carbon technologies.

Representing the fast-growing Hydrogen unit at EDP, Managing Director of Hydrogen Ana Quelhas sat on the “Enabling a Global Hydrogen Marketplace” panel, where she talked about the best market and business models to engage consumers and minimize government spending while achieving decarbonization goals through significant capital investments from public and private entities.

Also during CERAWeek, EDPR NA signed a memorandum of understanding (MOU) with Invest Alberta Corporation (IAC), committing both parties’ collaboration in spurring economic growth and high-quality job creation within the renewable energy sector in Alberta, Canada.

Aside from EDP high visibility on the speaker dais, the EDPR NA team conducted more than 10 significant bilateral meetings, carried out eight media interviews with publications – ranging from the Wall Street Journal and Bloomberg to S&P Global and Hart Energy – and participated in several key stakeholder side events over the course of the week. In addition, EDPR NA hosted two stakeholder events at its Houston headquarters. One event was hosted with Renewable Energy Alliance Houston (REAL Houston) featuring Jigar Shah, Director of the Loan Programs Office in the United States Department of Energy; the second event was a collaboration between EDPR NA and the Children’s Environmental Literacy Foundation (CELF) convening more than 70 teachers and students for a STEM (science, technology, engineering and math) related workshop.

CERAWeek afforded EDPR and EDPR NA the opportunity to engage in discussion with top energy companies, policymakers, and innovators on the latest developments in the industry, exchange insights and strategies to move toward a more sustainable, low-carbon future, and demonstrate the shared commitment of advancing the energy transition and achieving decarbonization goals. //

EDP's distributors **on the rise in Brazil**

Record investment demonstrates commitment to safety, quality, and efficiency.

In Brazil, our distributors in the states of Espírito Santo and São Paulo project a record investment of around R$6 billion in the strategic plan for the period between 2021 and 2025. It is almost double what was invested in the previous four years. This bold initiative is consistent with the company's vision for the future, where distribution is one of the key pillars for creating superior value and growth.

The investment portfolio focuses on decisions that benefit the company's 3.8 million customers, prioritizing service quality, people safety, sustainability, innovation, and the robust and modern technology that will enable us to move toward an even more efficient, productive, and effective future. It is with this goal in mind that EDP is continuously working to strengthen the electrical system through infrastructure works, operational improvements, loss reduction, measures to combat energy theft, and investments in digitalization.

Since 2021, 15 new substations have been put into operation: 5 in the São Paulo concession area and 10 in Espírito Santo. By the end of 2025, 17 additional substations are expected to be in service: 9 in São Paulo and 8 in Espírito Santo. The increase in grid capacity has allowed for greater flexibility with the implementation of new self-healing mechanisms (automatic load transfer), which are already benefiting 71% of customers in São Paulo and 62% in Espírito Santo.

The investments prioritize service within the concession areas, aligning the internalization of loads and the integration of new producers into our system, following the entry into force of Law 14,300 on the regulatory framework for distributed generation in Brazil.

In terms of grid automation and resiliency, the investments resulted in a significant reduction in business continuity indicators. Compared to December 2020, the Distribution System Average Interruption Duration (DEC) index registered a decrease of 14% in São Paulo and 15% in Espírito Santo. As for the Frequency and Duration of Outages (FEC) index, it also saw a 30% reduction in São Paulo and a 22% reduction in Espírito Santo.

In addition to the technical results, all the investments made in distribution were fully recognized, making EDP's distributors a benchmark in Brazil.

Leaders in the country

In Espírito Santo, EDP had the third best FEC in Brazil and met the reference values of the technical indicators established by the National Electric Energy Agency (ANEEL).

The conclusion of the tariff review process confirmed EDP's position in Espírito Santo with the lowest discount rate in the sector at 0.18%, an amount that has become a benchmark for the entire market, confirming the company's efficiency and technical capacity.

At the same time, EDP has informed both ANEEL and the Ministry of Mines and Energy of its intention to extend the concession of its energy distributor in Espírito Santo, whose contract expires in July 2025, for another 30 years. The federal government has until January 2024 to respond. ▶

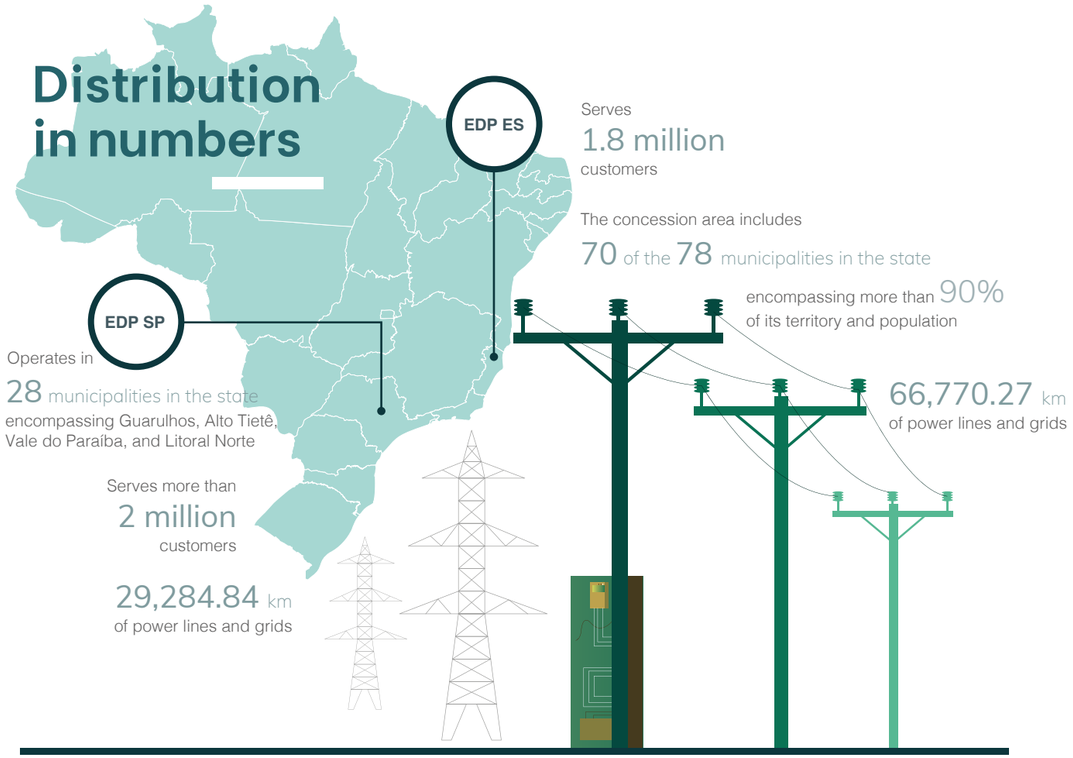
The investments demonstrate that the distribution segment is a priority in EDP's 2021–25 strategy for Brazil.

Social impact

Aware of its social and environmental responsibilities, EDP also develops initiatives that benefit the communities in its concession areas. One example of this is the School of Electricians, a free vocational training project for young people seeking to enter the job market, including affirmative action classes for women and transgender individuals. Through the EDP Institute, distributors are also developing initiatives to increase income in local communities, improve the quality of the learning environment, and provide incentives for sports and health activities.

“The investments demonstrate that the distribution segment is a priority in EDP’s 2021–25 strategy for Brazil and confirm our commitment to excellence in our operations in the country, without ever losing sight of ESG pillars,” says the CEO of EDP Brasil, João Marques da Cruz.

The positive impact of EDP in these areas of activity is well recognized. In 2022, one of the most important awards in the electricity sector — presented by the Brazilian Association of Electric Power Distributors (ABRADEE) — acknowledged the performance of EDP Group’s two utilities. EDP Espírito Santo was named the seventh best distributor in the country in the national category; the third best distributor in the Southeast region in the regional and social and environmental responsibility categories; and the second best distributor in the performance evolution category. EDP São Paulo, on the other hand, was recognized as the second best company in the country in the management quality category and the fourth best company in the operational management category. //



EDP organizes the largest electricity distribution event in Latin America

Between November 7 and November 10, 2023, EDP and the Brazilian Association of Electric Power Distributors (ABRADEE) will host the National Electric Power Distribution Seminar (SENDI). It is the largest discussion forum in this segment in Latin America.

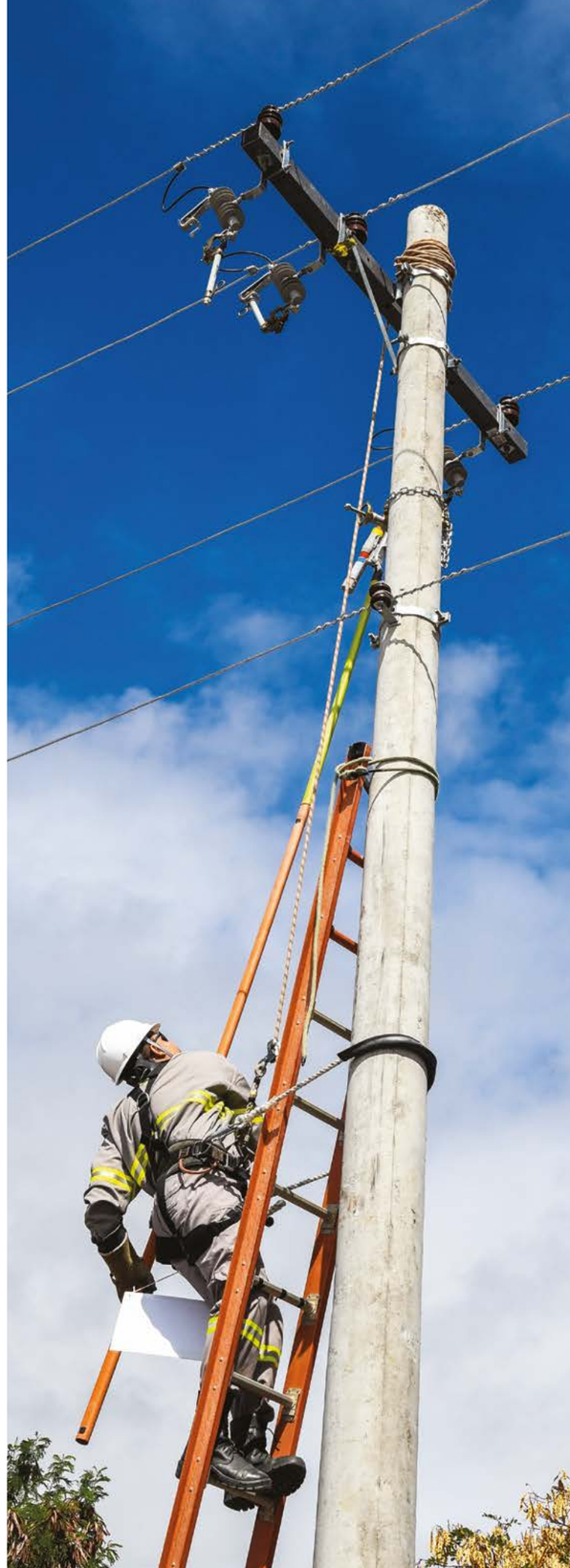
The biennial event will be held for the first time in Espírito Santo and is expected to attract more than 3,000 participants.

SENDI aims to promote the exchange of experiences among electricity distributors, fostering ideas on how to improve the quality of the services provided. According to ABRADEE, utilities invest R$26 billion annually to improve, secure, and modernize power grids. Their construction standards are becoming more sophisticated, with insulated and protected grids and more precise protection mechanisms.

In Brazil, the distribution segment has 88.3 million consumers, represents more than 4% of gross domestic product (GDP), and collects R$130.8 billion in fees and taxes alone.

SENDI features a diverse program of lectures, panel discussions, an expo, and a national electrician rodeo. The latter is a competition involving professionals from all over the country who demonstrate how they perform their daily tasks, while sharing the best safety and efficiency practices with other Brazilian utilities.

“We are at a time of transformation in the electricity sector, and being able to host SENDI 2023 is a unique opportunity to discuss future trends. We understand the importance of the distribution segment and believe it is necessary to discuss issues such as technological change, business models, and the relationship between society and the environment. Electricity plays a central role in the energy transition and in tackling global issues such as climate change. We hope that this will be a major event that reflects the importance of distribution to the country,” says João Marques da Cruz. //



act.

The new business plan in 12 questions

In early March, EDP presented its strategic plan for 2023–26 to the markets in London, announcing a significant increase in its investment in renewable energy sources: €25 billion gross and 4.5 GW of gross additions per year. This strategy aims to accelerate the company's long-term sustainable growth and guarantee its commitment to the energy transition. Learn about this new action plan in 12 questions and answers featured in the following pages.

.01 How does EDP plan to meet its all-green environmental targets by 2030?

The company has reiterated its commitment to abandon coal-fired generation by 2025 and reach 100% renewable generation by 2030. The goal is to achieve net zero emissions by 2040, as approved by the Science Based Targets initiative (SBTi).

To achieve this target, EDP is stepping up renewable capacity growth to about 4.5 GW per year, adding about 18 GW of new capacity by 2026. The objective is to have about 33 GW of renewable installed capacity by 2026, aiming to exceed 50 GW by 2030.

Our commitments

	Key figures and targets		
Accelerated and sustainable growth	€25 Bn gross investment 2023-26	4.5 GW/yr gross additions 2023-26	>50 GW RES gross additions 2021-30
ESG excellence and future-proof organization	Coal free by 2025	All Green by 2030	Net Zero by 2040
Distinctive and resilient portfolio	BBB credit rating	21% FFO / Net Debt by 2026	>80% EBITDA in high-rated markets (*Europe and North America*)
Superior value creation for all stakeholders	€5.7 BN EBITDA by 2026	€1.4-1.5 Bn net income by 2026	€0.20 new DPS floor by 2026

Wind & Solar

Wind onshore (5.0 GW)
Top 4 global1 player with extensive track record along the full value chain with highly experienced teams

Wind offshore (0.7 GW net)
1.9 GW in gross additions
Significant growth opportunity with medium term value crystallization, and CAPEX acceleration post 2025

Solar Utility scale (9.4 GW)
Additions ramping up quickly, leveraging presence in growing markets, through traditional and new technologies (e.g., floating solar)

Solar Utility scale (2.1 GW)
High growth market, leveraging on developed capabilities and portfolio, global footprint with transversal segments and business models, and synergies with utility scale

Storage (0.5 GW) **+ H2**
Market starting to materialize by 2025; target mainly co-located opportunities

Growth avenue reinforced by recent targets and existing portfolio; equivalent to ~0.4 GW of gross additions in partnership structures (incl. JVs)

1. Excluding China

2. Including financial investments

This gross investment of €25 billion for the 2023–26 period includes around €21 billion (85%) in renewable energy sources and around €4 billion (15%) in distribution grids. It represents an average annual investment of approximately €6.2 billion, 30% higher than the target set in the previous business plan.

The goal of diversifying the portfolio by investing in different renewable technologies remains unchanged: onshore wind (40%), utility-scale solar (40%), solar distributed generation (12%), offshore wind (5%), and batteries + hydrogen (3%).

Offshore wind, through the Ocean Winds joint venture, will represent 5% of the total investment in renewable energy sources — a figure which is expected to rise over the next 10 to 15 years. A diversified technological mix of renewable energy is supported and bolstered by a hydropower portfolio with strong cash flow generation, simultaneously providing flexibility and storage capacity.

02

How will the €25 billion global investment be distributed?

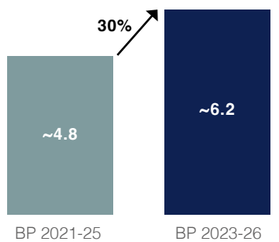
03

How will the investment be spread across the different countries where EDP Group operates?

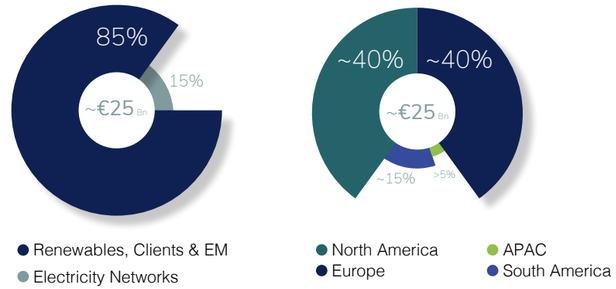
Europe and North America will split 80% of the investment, with each region getting 40% of the total. The other 20% will go to South America (15%) and Asia–Pacific (5%).

EDP currently has 22.4 GW of renewable installed capacity: 11.3 GW in Europe, 7.2 GW in North America, 3.1 GW in South America, and 0.7 GW in the APAC region. The company generated a total of 45 TWh last year.

Annual Gross Investments[1] (€ Bn)



1. Including financial investments



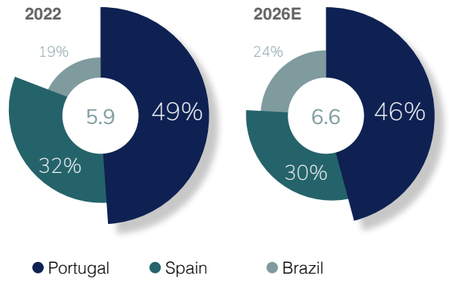
.04

How important will the distribution grid segment be?

The distribution grid segment will account for €4 billion of the investment plan. EDP will expand and diversify its portfolio in an area that will continue to represent a factor of stability for the company's business. The strategic plan also foresees expanding the distribution grid to include 400,000 kilometers, 9 million smart meters (2.5 million more than in 2022), and 12 million connection points (500,000 more than in 2022).

Distribution business

Regulated Asset Base, € Bn



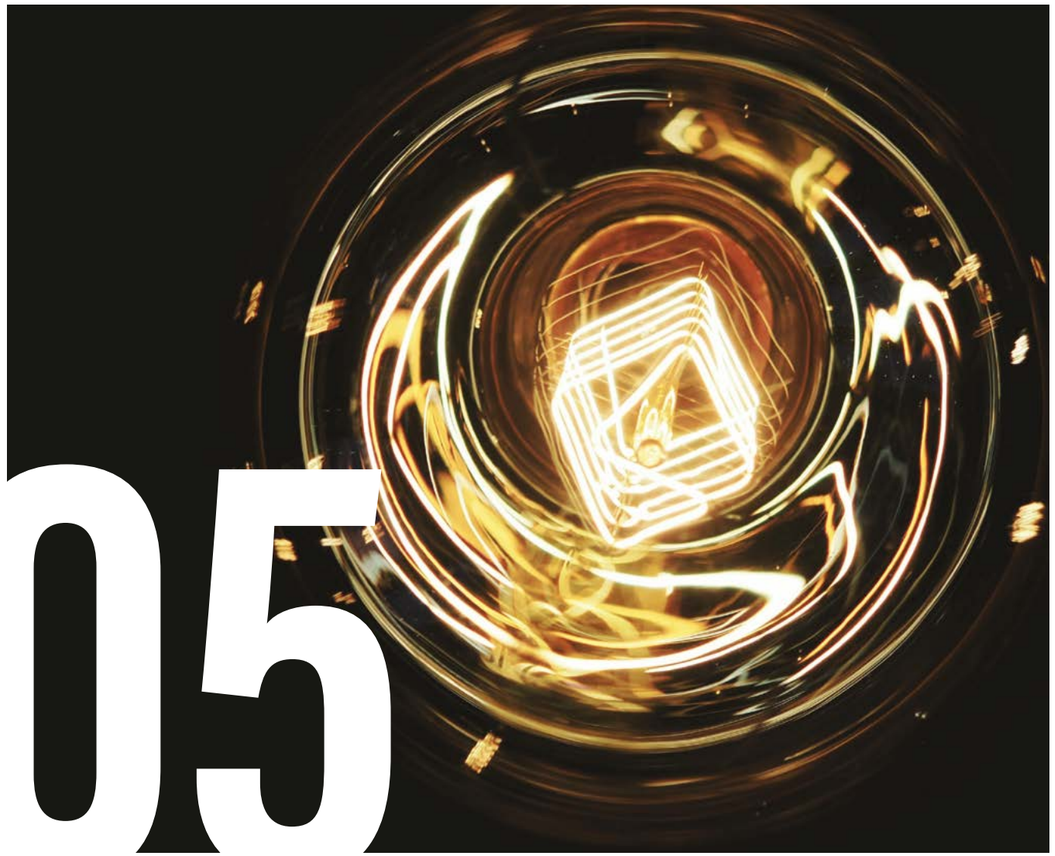
By 2026

400.000 kms
(+~20k *vs.* 2022)

>90 TWh
(+~5TWh *vs.* 2022)

~12 Mn
connection points
(+~500k *vs.* 2022)

~9 Mn
Smart meters
(+2,5 Mn *vs.* 2022)



05

What role will innovation and digitalization play in the coming years?

Innovation and digitalization remain at the heart of the strategy, driving change and accelerating the energy transition with a bolstered investment of €3 billion by 2026 (€2 billion for digitalization and €1 billion for innovation).

With regard to digitalization, EDP wants to reinforce the “digital first” mentality and culture, driving opportunities and increasing agility in the company. The goal is to reach 2026 with advanced analytics in 85% of our energy assets, artificial intelligence in 100% of our businesses, and 95% of our processes digitalized.

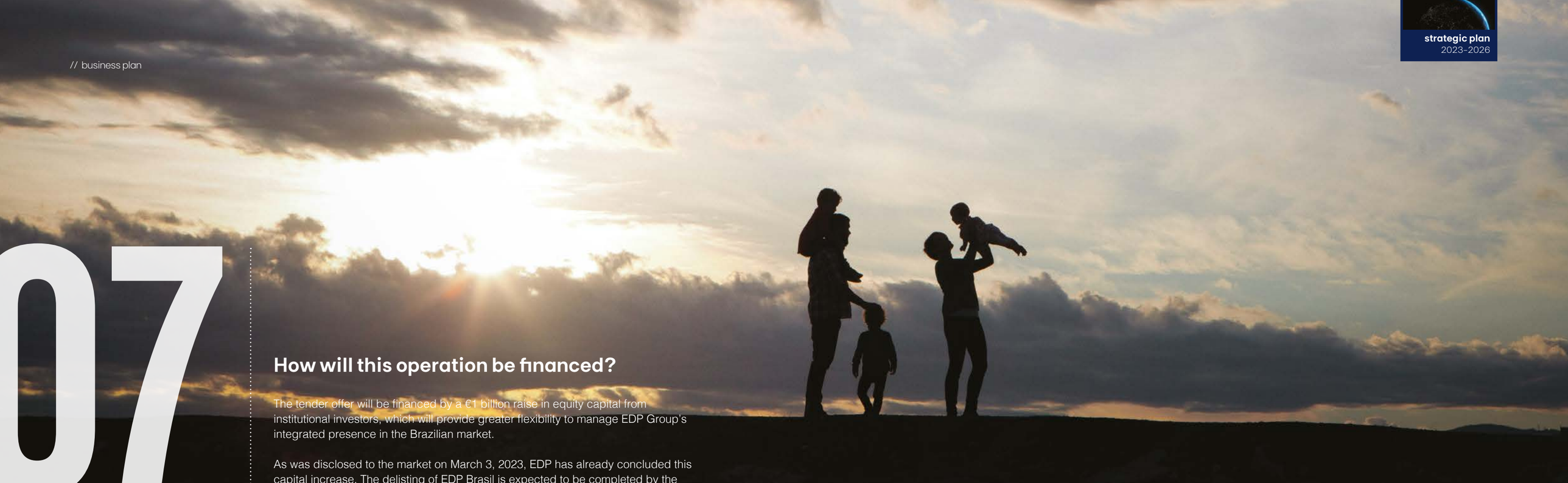
As far as innovation is concerned, the company intends to develop and scale internally incubated projects, build closer relationships with stakeholders — by running open innovation pilot projects, for example — and continue to invest in high-potential strategic startups. The macro objectives are the rapid adoption of innovation to accelerate the impact of what is new and the engagement of our people on a global scale in strengthening the predictive capacity and business expertise of the EDP Group.

06

Why did EDP launch a 100% tender offer over its listed subsidiary EDP Brasil?

According to EDP, the aim of this operation is to simplify the corporate structure and increase value with the company’s delisting. Brazil is a substantial market with robust fundamentals and numerous opportunities in energy transition. The reshaping of its portfolio in the country will enable EDP to continue to invest and strengthen its focus on the renewable energy and distribution grid segments, while reducing exposure to hydropower and moving away from thermoelectric generation.

Since 1995, EDP Brasil has grown with two additional power distribution concessions with 3.8 million customers, more than 2,000 kilometers of transmission lines, and 2 GW of hydropower capacity. EDP Renewables Brasil, which was established in 2009, currently boasts 1.1 GW of operational and under construction renewable capacity.



07

How will this operation be financed?

The tender offer will be financed by a €1 billion raise in equity capital from institutional investors, which will provide greater flexibility to manage EDP Group's integrated presence in the Brazilian market.

As was disclosed to the market on March 3, 2023, EDP has already concluded this capital increase. The delisting of EDP Brasil is expected to be completed by the third quarter of 2023.

08

What is the new dividend policy?

The company has implemented a new dividend policy with a payout ratio of 60–70% and an increase of the minimum dividend to €0.20 per share in 2026. This plan represents, according to EDP, a clear commitment to the energy transition; it accelerates investment and sustainable growth with a leaner, more global organization to create value for our stakeholders.

09

What are some of the EDP Group's targets in terms of ESG?

The strategic plan calls for more than 3,000 new hires by 2026 bringing a net total of 14,000 employees. It also sets a target of 31% women in senior positions, grounding the company's talent management strategy on recruitment, experience, and development, as well as maintaining its position as a top employer in all the markets where it operates.

EDP currently employs people from 64 different nationalities from around the world, and they will continue to support the EDP Group's ambitious objectives with their own drive and diversity.

EDP will also continue to support communities, helping them play an active role in the energy transition. This commitment will run in parallel with the effort to protect the planet for future generations, engaging our partners in a decisive transformation. With this objective, EDP Group expects to invest up to €200 million in social impact initiatives between 2021 and 2026.

10

Why are solutions such as hybridization, repowering, storage, and hydrogen playing increasingly important roles in the EDP Group's business?

The company is using its portfolio of resources and infrastructure to gain competitive advantage in the rollout of renewable energy products, standing out in an increasingly competitive market, and exploring new investment opportunities in renewable energy sources.

Hybridization is a process in which different renewable generation technologies are combined to produce electricity more efficiently, using the strengths of one technology to complement another. That is one of the main priorities in this new plan. Around 60 projects are already planned in Europe, totaling about 1 GW.

Another strong component of this strategy is repowering (i.e., the modernization of the existing power generation system), which can increase the installed capacity and the longevity of current power plants. There are eight projects currently in the pipeline in Europe, representing around 70 MW. This comes in the wake of the successful Blue Canyon II repowering project, which saw a rise in installed capacity of around 10% and an increase in the wind farm's expected lifespan of around 30 years.

Energy storage is another solution in which the company is set to further invest. An additional 0.5 GW in battery-based storage projects, largely co-located, are planned for 2023–26. About 33% of gross additions are also secured. The more mature North American market accounts for about 90%, with about 40 MW already under construction and a further 3 GW being developed, but EDP is exploring other markets to leverage its presence.

As for hydrogen, the goal is to reach a gross installed capacity of 1.5 GW by 2030, enabling the use of renewable energy sources to develop long-term options and leveraging partnerships as a mechanism for scalability.

Hybridization

Leveraging existing grid connection capacity (e.g., solar to wind, solar to hydro, wind to hydro)

~1 GW in Europe (60 projects), including first Iberian hybrid site in operation

Example: hybrid site of **70 MW floating solar, 70 MW of wind and 14 MW of solar utility scale**

Repowering

Increasing installed capacity and park's longevity

~70 MW in Europe (8 projects)

Example: Blue Canyon II Wind Farm **increased installed capacity by ~10% and park's longevity extended ~30 years.**

Storage

+0.5 GW battery storage for 2023-26, mostly co-located

~33% of gross additions secured

~90% in North America (more mature market, 40 MW already under construction, 3GW pipeline)

Exploring other markets, leveraging EDP's presence

Hydrogen

Allowing for **RES deployment and building long-term optionality**

1.5 GW gross installed capacity by 2030

Partnerships as a mechanism **to scale up**

Competitive advantage through just transition projects in Iberia.

.11

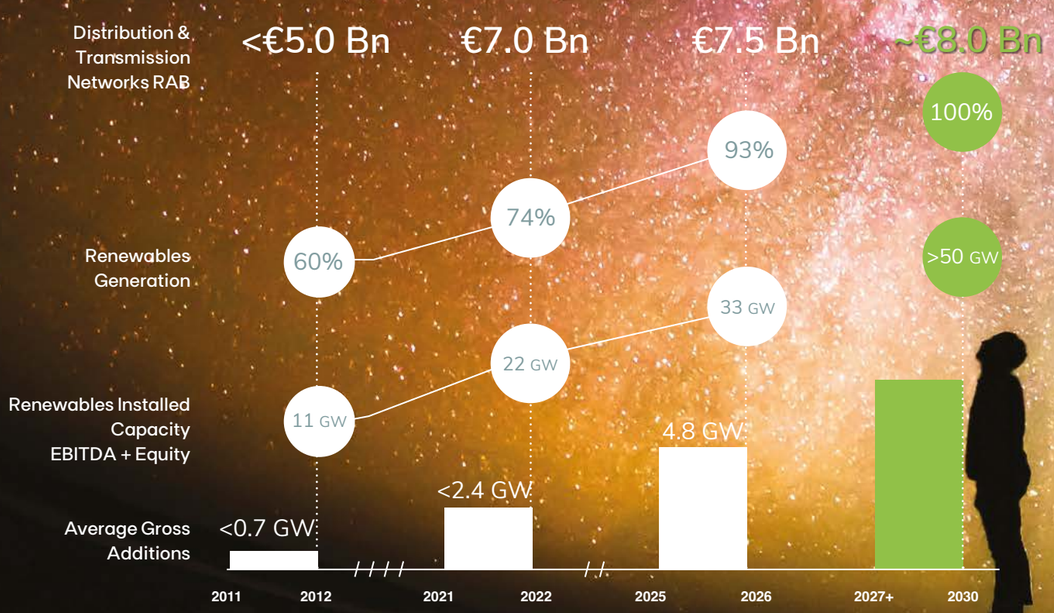
How will the solar distributed generation market grow?

Solar DG — where systems are installed near or within consumer sites, either on rooftops or on the ground, to generate electricity for local consumption — is a growing trend worldwide. It offers important environmental, economic, and energy security benefits. This segment is growing at around 40–50% globally, with about 80% of new additions happening in markets where EDP is already operating. The company aims to add 2.1 GWac by 2026, consolidating its foothold in a technology that will inevitably play a role in the future of the energy transition.

.12

What are the growth prospects?

We anticipate a recurring EBITDA of €5.7 billion in 2026, with an average annual growth rate (AAGR) of 6% for 2022–2026, and a recurring net income of €1.4–1.5 billion in 2026, with an average annual growth rate of 12%–14% for 2022–2026. We also expect to maintain a strong balance sheet, supported by organic cash flow and asset rotation, reiterating our commitment to a BBB credit rating, with an FFO/net debt ratio of 21% in 2026.



A behind-the-scenes tour of EDP Group's Capital Markets Day and business plan

EDP's new business was presented last March during the Capital Markets Day in London. It has been a long journey, however, stretching back to June 2022. André Fernandes and Miguel Viana, two of the people most responsible for the coordination of the business plan, tell us about the complex process behind it and explain the success of the operations.

When Miguel Stilwell d'Andrade and Rui Teixeira took to the stage on Capital Markets Day to present EDP's 2023–26 business plan, there were already a series of preliminary agreements, prepared processes, and a narrative in place — the result of nine months of hard work.

This key moment in the life of the company, which typically occurs every two years, starts many months earlier with an internal, bottom-up process involving teams from the various business units and locations. It is these teams who begin identifying market opportunities and translate that information into investment and growth objectives.

This process is accompanied by a more strategic stream to position EDP, identifying portfolio opportunities, market positioning, and transactions or capital market operations that may be of value to inform the plan.

In the case of the strategic document presented to the markets in March, the internal process began in June 2022. It included discussions at various levels in a bottom-up approach involving business teams from different regions and regular interactions with the Executive Board of Directors and the General and Supervisory Board to identify potential opportunities for EDP. By December, there was already a full picture of the most ambitious opportunities. It was based on that information that, between December and February, the team assessed the options and balance sheet constraints in a trade-off analysis to arrive at a more consensus-driven and robust understanding

> "It was only a couple of days before that we were able to get all the pieces together with commitments from investors"

of the group's strategic priorities and how to finance the plan. This is the most top-down phase where we try to put all the pieces together and see how everything fits. It is where the narrative of the plan starts to take shape — including the main targets and communication lines for our Capital Markets Day.

A position of strength

As emphasized by André Fernandes, Director of Global M&A and Corporate Development at EDP Group, "On Capital Markets Day itself, when Miguel Stilwell d'Andrade and Rui Teixeira take to the stage to make their presentation, we are already in a position of strength, with a very attractive narrative, coming from years of experience in the renewable energy segment, with upgraded ambitions and growth targets — and an investment envelope that is also EDP's highest ever." All of this, it should be noted, in an even more challenging context marked by soaring interest rates, a great deal of volatility in economies in general, and rising electricity prices in many markets.

This year, the priority fell on the two most strategic operations: the capital raise at EDPR and the buyout of minority shareholders in Brazil, financed by an equity raise at EDP. Listed since 1997, EDP has only raised its equity twice before: in 2004, to finance the acquisition of HidroCantábric, and in 2020, to acquire Viesgo.

The last month was a whirlwind of one-on-one negotiations with the Government of Singapore Investment Corporation (GIC), China Three Gorges (CTG), and the Abu Dhabi Investment Authority (ADIA). "There

was still some uncertainty in the air in the last two weeks and it got pretty intense," André Fernandes recalls. "It was only a couple of days before that we were able to get all the pieces together, with commitments from investors, processes in place for the equity raise at EDP and EDPR, and for the launch of the tender offer to buy the shares owned by minority shareholders in EDP Brasil. Only then were we ready to present the whole narrative, incorporating these pre-agreed operations, during the Capital Markets Day."

"It is one thing to go to the Capital Markets Day and say that we are going to raise €2 billion in capital without much visibility, and launch a tender offer at the same time. It is another thing altogether to go in with a €2 billion capital increase but with €1.6 billion in preliminary agreements, with predefined volumes and prices," says the man responsible for identifying growth opportunities and for the purchase, sale, and merger of EDP companies. "It means there was only about €400 million left to raise from other shareholders and investors — which, in the context of EDP and EDPR, is a relatively small amount." From that perspective, it turned out to be a lot easier to pitch and then target the existing shareholders and quality investors whom EDP wanted to underwrite the remaining amount.

Miguel Viana
Director of the Investor Relations Global Unit

"To raise capital from these large international institutions, you need to build a relationship of trust"

"It was very intense, especially during the last month, with a lot of moving pieces, but also with a lot of commitment and eagerness from the teams to 'get all the ducks in a row'"

André Fernandes
Director of Global M&A and Corporate Development at EDP Group

A relationship of trust

Miguel Viana, Director of the Investor Relations Global Unit, notes that the key component of an effective business plan is the balance between ambition and credibility. "It is not enough to present objectives. You must work on the realization of those objectives and deliver them." The way he sees it, EDP's business plans have been recognized as credible by leading international investors, who have placed their trust in the EDP team.

"We now have a roadmap and the conditions to execute a plan that is obviously fraught with challenges," he adds. "The energy transition requires capital, but in order to raise capital from these large international institutions, you need to build a relationship of trust. You need these institutions to trust EDP's track record."

This was a very extensive effort carried out by several teams within EDP, but where we had to come up with compromises. Some of the projects that were initially planned could not go ahead. There are constraints in terms of capital and decisions have to be made. "If we want to grow more in one market, we have to grow less in another; if we want to grow more in one technology, we have to grow less in another. We must have a vision of the common good, of what is best for EDP as a whole," Miguel Viana concludes.

In the end, all the effort made to build a credible plan driven by internal consensus paid off. On the very same day, stock prices shot up 5% — an upward trend that has continued ever since. And the investor roadshow, which was held on the days that followed, was consistently met with positive feedback.

But it was a complex process with a lot of "blood, sweat, and tears". Andre Fernandes says: "I think that is a good way of putting it, it was very intense, especially during the last month, with a lot of moving pieces, but also with a lot of commitment and eagerness from the teams to 'get all the ducks in a row' and to try to deliver what we actually ended up being able to deliver." //

The energy transition is ever more pressing

by André Anacleto | Partner @ McKinsey & Company

The World is changing fast, with the effects of climate change becoming more real than ever. The energy transition is playing a crucial role, being the driving force for change in our time. Not only are 80% of total greenhouse gas emissions come energy-related, but also we see a transition that is universal (every country and sector are affected), significant (massive investment required, $9.2 Tn annual investment, with +$3.5 Tn incremental), front-loaded (70% of the incremental investments are in the next 15 years), uneven (developing countries and fossil fuel-rich regions are most exposed), susceptible to risks (natural disasters such as heat waves and floods become more frequent, new record temperatures recorded and the sea level rises) and rich in opportunity (scaling significantly current businesses but also opening many new opportunities). The energy system will need to shift from fossil-fuels based to one that enhances efficiency and is based on renewable sources. Such transformation will require a significant evolution of the energy mix across countries and changes in the end-use applications.

Over the past decade, from 2011 to 2021, solar and wind production has more than doubled globally and its share of total primary energy consumption has increased from 9 to 13%. However, the share of primary energy from fossil fuels has remained largely unchanged, at 82%, which reflects the long path ahead to reduce fossil fuel dependency worldwide.

On the other hand, shifting global dynamics, such as gas supply shortages (e.g. 50% Russian gas flows reduction in 2022 vs. 2021), rising energy prices (3 to 6x in Europe and the US), and supply chain challenges (recovering from COVID-19 impacts) are affecting the energy sector, putting pressure on energy and food prices, sparking inflationary trends.

There is now, more than ever, the need for clean, affordable, and reliable energy. A throughout the cycle mindset, solving the key challenges to deliver an orderly energy transition is required. We already see an acceleration of the energy transition on nationwide/ regional programs such as the Inflation Reduction Act in US (>400 Bn$ by 2030), the RepowerEU (>200Bn€ by 2027) and the Green Deal Industrial Action in Europe (currently being developed).

But much more is needed. To meet the decarbonization targets and achieve Net Zero, there are still critical challenges that need to be solved, in order not to delay the energy transition. We would highlight four important unlocks:

1. Streamlining access to land and simplifying permit processes to accelerate time to deployment for renewables and cleantech – Streamlining the permit process and limiting the number of required project-approving entities could accelerate project execution. Access to land could be simplified by advancing projects that benefit local communities and by developing land-efficient solutions such as offshore wind. The use of alternative lands (e.g. agrivoltaic land) and innovative solutions such as floating solar photovoltaics could help expand the area suitable for installation of renewables.

2. Strengthening global supply chains to secure critical raw materials, components, and labor competencies – Countries will need to develop resource strategies to match their needs for components and materials with the supply that's available. This could include investing in product redesign to promote the substitution of constrained or at-risk materials. Promoting recycling and reuse could help limit demand for critical resources. The selective adoption of reshoring could promote the development of local supply chains. Setting up long-term agreements and partnerships with suppliers could be a hedge against variations in critical supply.

3. Modernizing and repurposing legacy infrastructure and creating new assets to accelerate the integration of renewables and cleantech into the energy system – Investing in developing and modernizing the power grid will be crucial to ensure that areas with high potential for renewables generation are integrated and connected with demand centers. Also important will be the development of new flexibility solutions such as batteries and better-matching supply and demand through demand-response programs—that is, incentives and technology solutions to adjust distributed energy demand and generation when the grid needs support. Conventional assets such as gas plants or pipelines might still be important to ensure an adequate supply, but they will need to be adjusted to reflect decreasing utilization or repurposed to use a cleaner fuel mix, such as hydrogen.

4. Decarbonizing the industry and transportation sectors by investing in new technologies such as hydrogen solutions for energy and carbon capture, utilization, and storage (CCUS), alongside electrification and energy efficiency – Providing incentives for investments in hydrogen and CCUS solutions could help increase demand in hard-to-abate sectors and, in turn, promote the growth of a green-product industry. Investing in electrification and energy efficiency could boost the decarbonization of light industry. The transportation sector could address its carbon footprint through incentives for the uptake of light-duty transportation. Technological acceleration could reduce the cost difference between fuel cell electric vehicles and conventional internal-combustion-engine vehicles for heavy-duty transportation.

Addressing these unlocks will be critical to shift from fossil fuels to renewables, reallocating capital and establishing new verticals, contributing to the overall economy. Although investments in renewables and cleantech have been increasing over the years, the energy transition is ever more pressing. //

There is now, more than ever, the need for clean, affordable, and reliable energy.

EDP Group's largest wind farm complex inaugurated in Brazil

In Brazil, EDP Renewables has inaugurated its largest wind farm complex in the world. With a combined installed capacity of 580 MW, the Monte Verde I–VI, Boqueirão I–II, and Jerusalém I–VI wind farms generate enough electricity to power a city of more than 1.5 million people.

In February, EDP Renewables inaugurated its largest renewable complex in the world. With 138 wind turbines and a combined installed capacity of 580 MW, the complex was built in Rio Grande do Norte, a Brazilian state where the company already had a significant presence. It now has more than 800 MW in operation, with another 300+ under construction. EDP Renewables currently boasts more than 7 GW of solar and wind capacity in various stages of development in Brazil.

This complex includes the Monte Verde I–VI, Boqueirão I–II, and Jerusalém I–VI wind farms. Together, they have the capacity to generate more than 3 million MWh/year, enough electricity to power a city of more than 1.5 million people. The project will avoid the emission of more than 1 million metric tons of CO_2 each year.

“We will continue to set the pace for the acceleration of renewable energy in Brazil. We have more than 7 GW in wind and solar power under development and due to come on stream in the next few years”, said Duarte Bello, COO for Europe and Latin America at EDP Renewables, at the inauguration of the complex.

According to Paula Dalbello, EDP Renewables’ Country Manager for Brazil, the new wind farms “will contribute to the increased consumption of sustainable energy, to lower carbon emissions across the state, and to local economic development. “We’re very proud of them,” she said, reaffirming the company’s commitment “to create a positive impact in a region where we will continue to invest.”

Focus on the development of the region

Projects such as this have a strong impact on the social and economic development of the region. A total of 3,300 jobs were created during the construction of the complex. Its operation requires another 80 permanent positions on site.

Since the earliest design stage leading up to the construction of these wind farms, EDP Renewables has attempted to diagnose and listen to the needs of the communities nearest to the project. It has also organized a number of initiatives in the surrounding region. EDPR Rural, for example, has had a positive impact on more than 700 inhabitants of the municipalities of Lajes, Pedra Preta, Caiçara do Rio do Vento, Jandaíra, and Pedro Avelino. The initiative involved providing training and technology to farmers so that they can grow and sell their produce and increase their household income.

Other initiatives focused more specifically on education. “Keep it Local,” which seeks to boost employability in rural areas, has provided renewable energy-related training to more than 40 local residents. “EDP in Schools,” coordinated by the EDP Institute and sponsored by EDP Renewables, has helped improve the quality of life of students in public elementary schools.

Consolidated growth

EDP Renewables has been consolidating its growth in Brazil since 2009, establishing itself as a leader in wind power generation.

The company currently employs 100 people and boasts over 1.1 GW of installed capacity (910 MW in wind power and 204 MW in solar PV). Its has power plants in operation and/or under construction in five states across the three most populous regions in Brazil: Rio Grande do Norte and Paraíba (in the northeast); São Paulo (southeast); and Santa Catarina and Rio Grande do Sul (south).

EDP Renewables expects to have a total installed capacity in the country of more than 1.3 MW by 2023. At the same time, it will bolster its presence in the solar power sector, which is also expected to continue to grow.

The potential for wind and solar power generation in Brazil is enormous. When it comes to wind power, the Brazilian Northeast Region has some of the highest capacity factors in the world, exceeding 50%. As for solar power, Brazil as a whole has one of the world’s highest solar irradiance levels, with capacity factors close to 30%.

Current projections suggest that this year’s investments may exceed R$100 billion, making Brazil one of EDP Renewables’ most important markets.

Projects such as this have a strong impact on the social and economic development of the region: total of 3,300 jobs were created during the construction of the complex and another 80 permanent positions on site.

Monte Verde I–VI

Located in the municipalities of Lajes and Pedro Avelino, in the state of Rio Grande do Norte. It is EDPR's largest wind farm complex in operation in any of its 28 markets. Construction started in April 2021.

6 wind farms
with **319.2** MW of installed capacity

76 wind turbines
Vestas V150-4.2 MW

48 km
of roads built

1,300+ jobs
created during the construction of the complex

40,440 m^3
of concrete in the foundations of the wind turbines

1,723,969 MWh
of generation capacity per year, enough to supply electricity to a city of

910,857 people
or approximately

314,089 homes

In one year of operation, the wind farm will prevent the emission of

600,000+ metric tons of CO_2

It is the 14th largest wind farm in operation in Brazil and the 2nd largest in operation in Rio Grande do Norte.

Boqueirão I–II

Located in the municipalities of Lajes and Caiçara do Rio do Vento in the state of Rio Grande do Norte. Construction started in June 2021.

2 wind farms
with **79** MW of installed capacity

19 wind turbines
Vestas V150-4.2 MW

11,000 m^3
of concrete in the foundations of the wind turbines

29 km
of roads built

1,000+ jobs
created during the construction of the complex

875,220 MWh
of generation capacity per year, enough to supply electricity to a city of

462,421 people
or approximately
159,456 homes

In one year of operation, the wind farm will prevent the emission of

305,000+ metric tons of CO_2

Jerusalém I–VI

Located in the municipalities of Lajes and Pedra Preta in the state of Rio Grande do Norte. Construction started in January 2021.

6 wind farms
with **180.6** MW of installed capacity

26 km
of roads built

1,000+ jobs
created during the construction of the complex

431,246 MWh
of generation capacity per year, enough to supply electricity to a city of **227,848** people or approximately **78,568** homes

In one year of operation, the wind farm will prevent the emission of
150,000+ metric tons of CO_2

43 wind turbines
Vestas V150-4.2 MW

24,800 m^3
of concrete in the foundations of the wind turbines

explore.

“Designing the question is always the first step”

Alejandro Aravena

Architect

For the architect responsible for EDP’s Lisbon headquarters II, right next door to the current headquarters, everything starts with a question. And it’s only after visiting the site of the project that the question emerges. In this interview, the 2016 Pritzker Prize laureate explains some of his choices for this project, talks about his influences, and tells us how the pandemic changed the future of architecture.

One of the first things you did when you arrived in Lisbon to design the new EDP headquarters building was to stroll around the neighborhood. Is that how you usually approach your projects?
One of the things we always try to do, in a very deliberate way and before coming up with an answer, is to have a good understanding of the question. Designing the question is always the first step. If you already know what you want to do with the building before you even visit the site, before you listen to the client and understand the environment, then surely that building isn't going to be the best answer. The site is very important. Lisbon has a very particular context, with a unique history and geography. So it was important for us to really understand the question before coming up with our answer.

Was there an added challenge in this case because of the way the new building would relate to the current EDP headquarters?
The existence of a neighboring building, designed by a great architect (Manuel Aires Mateus), was another component of the question. The building reflects the most important condition of the project, which is the master plan for this whole area. In a landscape that overlooks the river, we have to ensure the continuity of that setting. That is why we have a public space between two volumes. It would have been much easier for us to have a single building for the whole company, but we had the constraint of having to ensure that perception of continuity perpendicular to the river.
We basically had to respond to two opposing forces: the functioning of the building called for a single volume, but the site demanded that it be divided in two. It was important not to interrupt that line of sight between the viewpoint and the river.

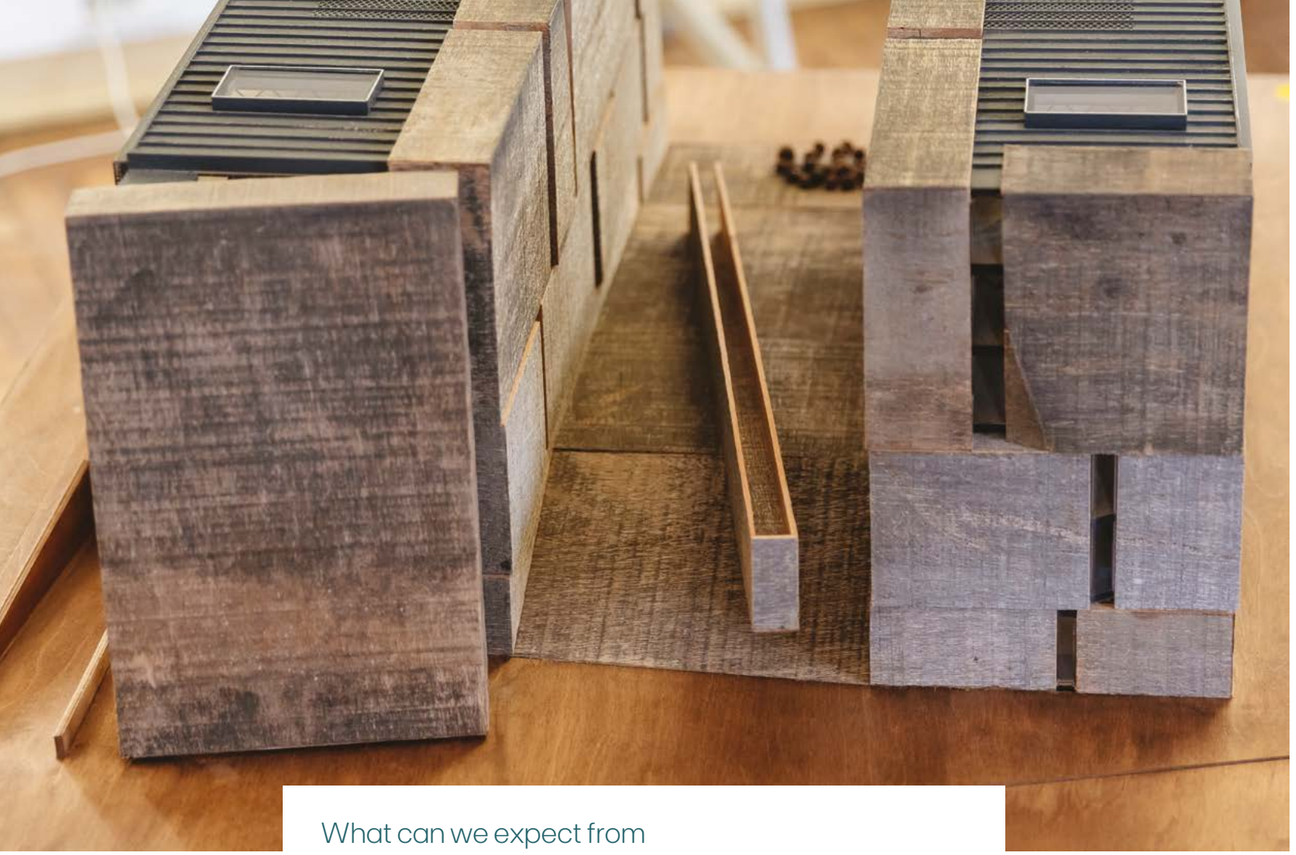
Once you had understood the site and found the question, what was your inspiration for the project?
I don't know if inspiration is the right word. For some, that may work; but for others, it comes from somewhere else. For us, we want to be present in the place. So, I would say that it's not inspiration; it's our reading of the place. The challenge of architecture is that it has to provide answers to very clear and tangible questions — weight, forces of gravity, deadlines, laws — while at the same time it responds to more intangible aspects, on an emotional and symbolic level. Your intuition understands a lot more than you think you know about the place. It can integrate very tangible forces inherent to the human condition, while inspiration comes from somewhere else.

How long did it take from the initial idea to the final version of the project?
As I mentioned, we first had to listen to the client and understand the place and the culture. Then, we had to bring it all together. From the moment we listen to the client to the moment we think we have the question, we have to be very quick. The Portuguese tradition of architecture is very strict in its approach to the trades, to the art of building. So it took longer here than it would in other places, like in

Chile. But I think this was one of the projects with the strongest sense of continuity. It was a smooth continuum, without any fluctuation. And that's not very common in architecture.
It's a kind of serenity that we hope will be reflected in the building.

The inauguration of the new building is a little over six months away, but anyone walking by can't help but notice its unique design. As the brains behind it, what do you consider to be the main features of the project?
The biggest impact of the project can't even be seen yet, because it's still under construction. The building will relate to the way people move around the city. The project doesn't just have a visual impact; it also has an impact on people's day-to-day lives. There will be a plaza with a small hill and a connection between the two buildings. You can't see it from the outside; you will only notice it once you enter that plaza. The reason for the two volumes, of course, was to free up the view of the river, similar to what was done in the first headquarters. That experience is the project's true contribution to public life. At the same time, it adapts to the people who are going to occupy this building. ▶

"The building will relate to the way people move around the city. The project doesn't just have a visual impact; it also has an impact on people's day-to-day lives."



What can we expect from the new EDP headquarters?

The project harnesses the potential of concrete and glass. Its use of sustainable materials lends it a sense of timelessness. With a gross area of 23,800 m² and a net area for services of 11,400 m², the new building will include four levels of parking with 257 spots, 97 of which will be public.
Once completed, it will accommodate about 800 employees who are now working in other spaces around Lisbon.

The project provides for the construction of two volumes — east and west — connected at the basement level and standing six stories above the ground. The lobby and reception area will be on the ground floor; the offices between the second and fifth floors; and the fitness center, terrace, and conference room on the top floor. Each volume occupies an area of around 1,000 m².

In the center of the site, on the ground floor, there will be a tunnel that gives access to both volumes. A "sloping outer block" will lean against the west volume, resembling a "fallen book."

This plaza has been designed to function essentially as an atrium and cafeteria, outside the footprint of the two volumes. This will be a purely public space, which will also feature a platform providing a viewpoint of the Tagus River.

"As an architect, I think we know that cities are measured by what we can do in them for free."

What you're saying has a lot to do with what EDP has been advocating, which is the idea of giving back to society. Is the building's intention to bring the public closer to our way of being?
Yes. And as an architect, I think we know that cities are measured by what we can do in them for free. The quality of public space is directly proportional to what you don't have to pay to enjoy that quality. This is a tool for equality and redistribution. A great quality public space is able to equalize access to what is good for citizens, without them having to pay for it. And this is a space where not only are you not paying, you don't even feel like you're entering someone else's territory.

This new building was designed a few years prior to the pandemic — which, as we know, has completely changed the way we work and interact with one another. How does the building respond to these new demands?
That is a very interesting question, because it is being asked all around the world. In our other projects, the question is the same. The pandemic opened up new opportunities in the most developed countries — like being able to work from home — but for most of the world, that isn't really true. Being able to choose to work from home is only for a small elite. Manual work and physical labor continue to lead people to move to big cities.
There was a very interesting change in this project. The initial brief measured the capacity of the building in terms of personal offices. The issue is that, now, your personal office is the one you have at home. So, since the pandemic, these projects started to be measured by how many meeting spaces you can create. Physical presence is still the best way to share knowledge. That won't change, even with the best technology. We may be working with 21st-century software, but our hardware is prehistoric. Our body still responds to very primitive forces. We can't look solely at the pragmatic side of work; we also need to consider the exchange of knowledge, of experiences, the emotional dimension. Work is much more than a task that has to be delivered; it is also the trust and affection between people. And that happens when we prioritize social spaces. The conference room is very important, but even more important than the office is the chance to meet in the cafeteria, to talk in the elevator...

When you were awarded the Pritzker Prize in 2016, you were the first Chilean architect to achieve that recognition. That same year, you were also the first Latin American director of the Venice Biennale of Architecture. What did those achievements mean to you?
First of all, those aren't personal achievements. The thing about architecture work is that it's not like I can just wake up one day and decide to make a building. Someone has to need a building. I can't operate solely on the basis of my personal choices. I can design, but these people here [Alejandro Aravena points to the construction workers] are building what I designed with their own hands. So, no matter how you look at it, including from the point of view of creativity, architecture is a joint effort. I tried to choose my words very carefully in my acceptance speech for the Pritzker Prize. One of the things I mentioned is still very resonant, and that's freedom. I think a prize gives us a lot of freedom to make the professional choices that make sense to us. We are a small team, so we can't take on every project we are offered. But we don't need that many projects, either. We like to give priority to projects that contribute to the common good or that are innovative.

You have already created some 90 projects, in more than 30 different countries, for a wide range of purposes. Is there one that has stood out to you more than the rest?
Honestly, no. We are very deliberate in our decision for there always to be a social dimension to our projects, some cross-pollination. We have to have social housing projects, where no one will concede to an inch that isn't necessary and where anything superfluous gets thrown out. A project that has been stripped of what wasn't absolutely necessary has a better chance of standing the test of time. Social housing is a filter against the arbitrary. ▶

As architects, our tools — our designer muscles — have to be exercised as rigorously as possible. That's what happened with this EDP project, where we had more scope to make other choices. This capacity to exercise our tools and filter out the arbitrary has to be a constant presence. It's important to be aware of the symbolic and emotional dimensions of every project, which exist even if you don't want them to. Even before it is completed, the building has already made an impact, for better or for worse. The balance between these symbolic and practical dimensions is something that we are always keen to integrate.

And who are your main influences? Is there anyone you particularly admire?
I think that influences are often unconscious and run very deep. There is clearly the influence of the way each person was raised. In my case, in Chile, I was influenced by my family, by the humility and sobriety of a life of hard work. So when an opportunity presents itself in life, you know you have to seize it. Of course, I had teachers who were very important in my training, and then I met so many others that it would be unfair to name just a few.
There are sometimes influences that you don't even know are going to be important, that are a surprise even to yourself. We were recently awarded the Bank for International Settlements project, and it was like the final of the 100-meter dash in the Olympics. There were other offices that I thought were better qualified than us, but we had nothing to lose. And for me to get into this project, I found it helpful to read Ayrton Senna's biography, because he was not only focused on his own career, but also on everyone else's around him. For that project, we tried to find out what the other offices were going to do. Not just to win, but to get a better understanding of the question and make the most natural choice for us. I am very interested in biographies, even if they have nothing to do with architecture. In fact, I consume very little architectural content; I can't even remember the last book about architecture that I bought. I am very interested in studying architecture, but by visiting buildings. Built architecture always holds a lot of lessons.
I was once asked, during an interview in Denmark, about my advice to young architects. I mentioned two things: be as big a nerd as possible, picking up as much information as possible; and be irreverent, going against the trends. This balance between conformity and non-conformity is very important.

With so much changing in society — the pace at which we live and the changes in the life of the planet — has your profession become more challenging? What are the priorities for architecture in the future?
Chile is a sort of microcosm of many of the world's problems right now. Our system has such inequalities, it is such an abusive economic system, that some people have nothing to lose and are trading the rule of law for the law of the jungle. It is important for architecture — and especially cities — to reflect on those inequalities. That reflection must be direct and even blunt, but must also be done daily. Those experiences of inequality happen daily; they aren't just an abstraction. You wake up in the morning in the third world, take public transportation over to the first world to work or study, and at the end of the day, you go back to the third world. The anger at this situation just builds up, and it is enormous. Cities can work to even out those inequalities by designing public spaces, transportation, and housing that can improve people's quality of life. That's why it's important for cities to be measured by how much free stuff their inhabitants can do in them. What the pandemic, climate change, and social inequalities have proven is that those problems are no longer personal; they are everyone's problems. Even this idea of following your own dreams. You want something badly enough and you do everything to make it happen. But if it goes against the common good, what can you do? Freedom isn't that free. I think that is the big challenge: self-regulation.

How do you think EDP employees will react when they enter the building for the first time?
I hope they think it is just as nice to come to work here as it would be to stay at home. I hope it is a welcoming place. //

"What the pandemic, climate change, and social inequalities have proven is that those problems are no longer personal; they are everyone's problems."

“Art is a way of trying to contribute something positive to this chaotic world”

Alexandre Farto, a.k.a. Vhils

EDP teamed up with Vhils to bring new life to decommissioned sections of thermoelectric power plants, in what is the first underwater exhibition in Portugal. In this exclusive interview, the artist tells us more about the process and the message he wanted to convey — and reveals that the ultimate goal of his work is “to help make visible that which is invisible.”

What is the intended message of this first underwater exhibition in Portuguese waters?
The exhibition’s central message is one of sustainability through the reuse of materials, as well as a call to preserve the oceans. The exhibition is an immersive experience that explores the complex relationship we have with the sea and the impact we have had on its various ecosystems. The aim is not only to highlight the undeniable beauty of the underwater environment, but also to raise awareness of its critical importance to the survival of the planet. By reusing these physical structures, we are also alluding to the circular economy and the role that culture and art can play in promoting more environmentally friendly production models. ▸

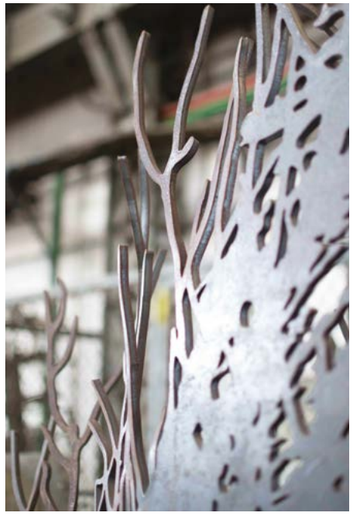
Given that it is submerged and only visible to scuba divers, what is the ultimate goal of this installation? What will happen to it as the years go by?
From its inception, this project was designed to enhance the ecosystem, using materials and creating conditions that benefit the local flora and fauna. The ultimate objective is that, over time, the installation will have a positive and constructive impact on the marine biological and geological environment where it is located and prove to be an asset to it. This will be made possible by various elements that are inherent to the construction and implementation of the project. First, all the pieces were designed to welcome local species, providing safe passage and promoting their preservation. The natural habitat is also enhanced by the incorporation of rescued coral, which over time will create a new ecosystem and add an important layer of biodiversity.

What was the process like, from the initial creative concept and choice of materials to the final result?
The unique nature and complexity of the project meant that it took several steps to arrive at a cohesive creative concept. First, we had to take diving courses and get the necessary certifications to be able to look for the best location. Once we found the location, we still had to dive several times to find the best way to arrange the pieces and create the narrative around the characteristics and needs of the surrounding environment. There was also a long process involving various specialists in the area, who we consulted with to understand the environmental impact, figure out the best way to respect and foster marine life, and ensure the viability of the sinking operations and the durability of the installation by fully integrating it into the ecosystem.

“EDP made all of this possible, and I believe it was an initiative where our visions aligned perfectly”

What convinced you to accept EDP’s invitation? Was it the added challenge, because of its unique characteristics?
The creation of an underwater exhibition with these characteristics and objectives was something I had already imagined and really wanted to achieve. EDP made all of this possible, and I believe it was an initiative where our visions aligned perfectly.

Working underwater presents a number of challenges, not the least of which is the issue of environmental integrity. We put a great deal of effort into it. On the other hand, there are also many technical challenges related to the behavior of the pieces in an underwater environment, which had to be carefully considered. The reduced visibility was also a challenge. Although the exhibition is located at a depth that guarantees optimal visibility of the pieces in the context of diving, visibility underwater is not the same as visibility on land. So, it was also something to take into account when assembling and submerging the pieces. Lastly, there was the question of feasibility. The installation had to be adapted to the characteristics of the environment to ensure its longevity — and we had to find ways to control and carry out the submersion of such large pieces.



How do you define yourself as an artist? What is the main drive of your work?
I like to think of my work as something that helps us understand what lies beneath the surface of things. I dissect things to understand how they work. The aim is to play with materials and their natural form, to confront different realities, themes and techniques, and to create a dialog between them. That is why subtractive techniques are at the core of my creative approach.

For me, art is a tool that can help us focus on current issues, both locally and globally. Art is a way of trying to contribute something positive to this chaotic world. My main objective is to raise questions and help people think about the process, and to focus on places and communities experiencing enormous transformations that are threatening their identity. I like to humanize the urban landscape while exploring notions of identity and how people and the places they live are in a cycle of mutual influence. I also like to explore randomness and the ephemeral nature of things, both of which are deeply connected to what I do and how I do it. I am interested in incorporating these elements into my ▸

Portuguese artist Alexandre Farto, also known as Vhils, has influenced audiences around the world with his unique approach to art. Using techniques such as sculpture, engraving, and installation, Vhils creates works of art that celebrate the beauty and complexity of modern cities, as well as the histories and cultures that make them unique.

Born in Lisbon in 1987, Vhils began creating urban art as a teenager, scrawling graffiti on walls and abandoned buildings. His distinctive style began to emerge when he ventured into new techniques such as relief portraiture, removing surface layers of walls and building materials to reveal contrasting images.

Since then, Vhils has expanded his reach to become one of the most highly regarded contemporary artists in the world. His work has been shown in galleries and museums around the world, including the Contemporary Arts Center in Cincinnati, the Palais de Tokyo and the Danysz Gallery in Paris, and the Museum of Contemporary Art in Beijing.

A pioneering project

As part of our commitment to be 100% green by 2030 and to stop producing energy from fossil fuels, EDP challenged Vhils to develop an artistic project using pieces that were once used to generate electricity. With the power plants being decommissioned to make way for renewable energy projects and innovation centers, these pieces have been given new life.

Over the past three years, Vhils Studio and more than 200 people from a variety of teams have been involved in visiting the decommissioned facilities, developing the creative concept for EDP Art Reef, and selecting the materials. The final result was on display next to the EDP headquarters in Lisbon until April 15th — and is now submerged off the coast of Albufeira. The pieces were designed to create a new artificial reef and are located at a depth of approximately 12 meters, making them accessible only to qualified divers.

The EDP Art Reef will be a home for thousands of living marine creatures while preserving an area of the country that suffers from the daily impact of jet skis, recreational boats, and illegal fishing.

The project will also transform the Algarve into a major cultural and recreational diving destination. The project was therefore developed with the support of the Municipality of Albufeira, Turismo de Portugal, and CCMAR – Center of Marine Sciences (University of the Algarve). It has also been approved by the DGRM – Directorate-General for Natural Resources, Safety, and Maritime Services; and by the Portuguese Environmental Agency. In turn, the submerging of the exhibition is licensed by the Institute for the Conservation of Nature and Forests and the National Maritime Authority.

“Much of my work involves a play on light and shadow”

work and making them part of the pieces themselves, working with nature and the way time changes materials and surfaces, as well as the chaos of the city.

By examining how the city and public spaces shape who we are — and, in turn, how we help shape the city and its landscapes — my work explores growth and expansion through the various materials, processes, and techniques I choose. It also reflects on how the city needs contrasts, whether social or material, for it to exist and function. Much of my work involves a play on light and shadow as a metaphor for how we mostly only pay attention to the blinding light of development and rarely consider the deep shadow it casts on other parts of the city and its inhabitants.

You could say that my work is about human identity, about nullification and resistance in this overwhelming environment, exploring the connections and contrasts between global and local realities. In short, what I’ve been trying to do with my work is to help make visible that which is invisible (whether tangible or intangible), to explore the layers that build up in the course of our daily lives in the city, and to make us reflect on what we are trying to achieve. //

Periscope

This piece is the entry point into the exhibition, its symbolism accentuated by its position. On passing through the center of what was once a coal mill, visitors can observe, through each of its openings, a different composition of the three continents that enclose the Atlantic. The orientation of those openings corresponds to the geographic position of the continents. The artistic intervention on these openings features hollow metallic elements, consisting of geometrical patterns that depict faces of their respective inhabitants. The piece represents a period when humanity simply looked out across the sea, an impassable barrier that aroused both curiosity and fear of the unknown. This iron sculpture, the tallest in the exhibition, was created by Vhils from the body of the coal mill from a decommissioned thermoelectric power plant, after being stripped and cleaned of any contaminants. It features three faces carved in the iron. The cylindrical structure is 5.30 meters high and 4.77 meters in diameter, and it will sit on a concrete base.

Carcer

Once used as a water tank for the cooling systems of the Carregado thermoelectric power plant, this piece became a canvas depicting a city — the epitome of technological, economic, cultural, and social development. It also represents the current state of humanity, “trapped” in urban centers and disconnected from the natural environment. It consists of a sculpture made from an iron tank (2.80 meters high, 3 meters wide, 4.20 meters long) and a concrete plinth (4.20 meters wide, 3 meters long).

Building stronger community relationships with Community Relations Coordinators

Setting up for development projects' success in North America: the importance of Community Relations Coordinators and insights from the first person to hold the position.

In 2022, EDPR NA initiated the Community Relations Coordinator plan, aiming to establish stronger relationships between development project sites and their communities through key, dedicated personnel – Community Relations Coordinators. The first person to assume this role is Mark McKibben, Community Relations Coordinator at Cattlemen Solar Park in Milam County, Texas, United States.

Over the past few years, EDPR NA has recognized the inherent need for a group of specialized people who could help mitigate the risks of opposition to its proposed renewable energy projects, streamline the permitting process, and support future development in areas where the company already has operational projects. As a result of these considerations, the implementation plan for enhancing our community relations support for development through the recruiting of Community Relations Coordinators was launched in 2022.

Embedded directly into EDPR NA's Development team and supported by the Community Relations team, Community Relations Coordinators (CRC) play a critical role in building meaningful relationships and fostering trust within a project community. As on-the-ground advocates, the CRCs provide valuable insights and act as a liaison between the project team and community members. They work closely with the Community Relations team to identify community engagement opportunities, staff community events, and connect residents with the Development team to further engage in discussions that can mutually benefit EDPR NA and the local community.

CRCs are tasked with three purposes:

- **Building trust:** Given the current climate of misinformation and tensions between urban and rural communities, CRCs' earning trust from the communities where we have development projects is critical to prevent significant risks to successful permitting and future growth.
- **Gaining insight:** CRCs' profiles are typically that of a longtime local community member who can provide a deeper level of insight into the local influencers and decision-makers and the best approach to collaborate with them.
- **Growing advocacy:** With today's opposition being quick to mobilize, CRCs are responsible for identifying and cultivating local project advocates to combat misinformation and misrepresentation.

It is also important to note that CRCs are not to represent the project in a legal context, such as engaging with government authorities on behalf of the company.

EDPR NA's first hired CRC is Mark McKibben working to support the Cattlemen Solar Park in Milam County, Texas, United States. With a background in engineering, Mark has always been curious about different energy systems, so when the Cattlemen team opened the position for a CRC, Mark did not hesitate to express his eagerness to be considered. Read the Q&A above to learn more about Mark. //

in the first person...

Mark McKibben

What drew you to EDPR NA and the CRC position?
I live in Cameron, Texas, and one thing I'd like to do here at my place is to develop a solar energy system to run the property. When I read that EDPR NA was applying for a tax abatement here, I got very curious and asked the then-judge if he could make an introduction for me. I then had an opportunity to meet Evan Halloran, Development Project Manager II, and he gave me a very interesting briefing on what EDPR NA was going to develop here. It sounded exciting to me, and after about a year of keeping in touch, when Evan mentioned the CRC position and asked if I would be up to help with community relations for the Cattlemen project, I said, "Hey, I'm your guy." I'm happy to be part of the team now, and I've been very impressed with the quality of the company and the dedication of the people I've worked with.

What is your goal during your CRC tenure?
I love talking to people and attending local community events, so my goal is to work with the community and make them feel good about EDPR NA and solar energy, and how it can bring benefits to all the residents. I want people to be confident in the development of Cattlemen and know that their support will be beneficial for the community in the long run.

One of the main jobs of CRCs is to break through communities that are still hesitant about renewables. What are your plans to maneuver that hesitance?
Getting out in front of misconceptions is one thing that I prioritize. For example, I have heard a misconception that solar panels can leach certain elements into the ground, which can cause potential contamination. We know that this is not true, and so those are the kinds of things I want to make sure everyone understands and have all of their questions answered with facts.

How has your experience working with the Cattlemen team been so far?
I have received a lot of support from the team. Whenever I have questions, they provide me with thorough answers and many resources to refer to. I truly feel I'm being supported, and I'm looking forward to making great things together with the Cattlemen team and EDPR NA.

inspire.

Hybridization
accelerating the energy transition

Hybrid energy systems, which feed electricity generated from two or more renewable sources into the grid, are increasingly becoming mainstream. At EDP, we started blazing this trail nearly five years ago. Last year, at the Alqueva reservoir, in Portugal, we inaugurated the largest floating solar power plant in Europe. This year, in Sabugal, the first hybrid wind-solar power plant on the Iberian Peninsula went into operation.

The first hybrid wind-solar development on the Iberian Peninsula consists of the Mosteiro Wind Farm and the Mina de Orgueirel Solar PV Power Plant. Located only a few kilometers from the center of Sabugal, in the district of Guarda, it will supply renewable energy to more than 30,000 people (see our photo report on the following pages).

"EDPR's first hybrid power plant is the result of both our pioneering and innovative spirit and our firm commitment to the energy transition in the main markets where we operate," says Duarte Bello, COO for Europe and Latin America at EDP Renewables. "With this hybridization, we are increasing the region's electricity output and minimizing the impact of new renewable projects, since we use existing infrastructures."

"We are actively developing projects and looking at opportunities to hybridize our wind farms. But we are also working with EDP Produção to hybridize hydroelectric and even combined cycle power plants," explains Hugo Costa, EDP Renewables' Country Manager for Portugal. "We currently have about 350 MW in an advanced stage of development, with another 1,000–1,500 MW of other opportunities for the next seven to ten years."

EDP is planning to invest €25 billion in energy transition projects, and wind-solar hybridization is one of the priorities. More than 1,600 MW in hybrid projects are currently being developed in Portugal and Spain. These are at various stages of maturity and scheduled to come on stream over the next few years. ▸

Visiting EDP's first hybrid wind-solar power plant

Traveling along Highway 233 between Sabugal and Guarda, all you can see on either side are mountains. On one of them, in the distance, you catch a glimpse of the eight wind turbines of the Mosteiro Wind Farm, which have been feeding electricity into the grid since 2004.

It is here, near the border town of Sabugal, along the Côa River, that EDP Renewables (EDPR) has inaugurated its first hybrid wind-solar project on the Iberian Peninsula.

MINA DE ORGUEIREL SOLAR PV POWER PLANT

17,000
bifacial solar panels

8.4 MW
of installed capacity

MOSTEIRO WIND FARM

8
wind turbines

11 MW
of installed capacity

This hybridization project can produce a combined total of

39.5 GWh/year

That's enough to supply electricity from renewable sources to

30,000+ people

You turn off the highway and continue along a dirt road. After a steep climb up the mountain, you finally see it: a sea of mirrors reflecting the shy, early morning sun. You've arrived at the first hybrid wind-solar power plant on the Iberian Peninsula. It is here, between steps and terraces, that EDPR has installed 17,000 solar PV panels. It's 11 hectares of hilly terrain that had been devastated by wildfires — and more than once. The complex operation, which began in 2022, presented some challenges to EDP's engineering team.
According to Adelino Barbosa, Head of Project Management at EDPR Portugal, areas such as this, "with their ever-changing rock layers, offer up surprises." And that turned out to be one of the biggest challenges in the construction of this facility. "Halfway through the project we had to change the type of borehole, because the ground hardness was different," Barbosa recalls. "Those are the kinds of challenges that crop up during the construction, and engineering has to react very quickly so that the project can move forward without damage or loss of equipment."

From the top of the mountain, the landscape is stunning: you can see the uppermost peaks of the Serra da Estrela, the city of Guarda, and across to Spain. The Côa River cuts through the painting-like scenery. The wind is strong and icy. The turbines dance at breakneck speed, creating their own music. With hybridization, we can produce both wind and solar power at the same time. "Right now [during the morning], we are producing primarily wind power," says Hugo Correia, who has been Head of Power Plant Operation and Maintenance for 16 years. "Solar power can only generate the difference between what the wind is producing at any given time and 10.5 MW, which is our maximum output." ▶

At the top of the mountain, spread out over 1 km, we find the eight wind turbines we had seen from the highway. From up close, their size becomes even more impressive: each one is 56 m tall, the equivalent of a 15-story building.
The Mosteiro Wind Farm has a total installed capacity of 11 MW and already features an even more powerful turbine, installed as part of an over-equipment project. Since coming on stream in 2004, it has already generated more than 350 GWh of clean energy.

Right across from the substation, we find the gate to the Mina de Orgueirel Solar PV Power Plant. Hugo Correia opens the gate for a visit to the sea of mirrors nestled into the mountainside, blending in with the Côa River. “Installing these panels was not an easy task, especially on terrain as steep as this.” Everything was done with the utmost care, from the transportation to the assembly of each panel.

As the day progresses, the wind subsides and the turbine blades slow down. The sun is already high, and most of the power being injected into the grid is now solar. The sun shines on the bifacial solar PV panels, a technology that sunlight to be captured from both sides and maximizes power generation. The entire array has an installed capacity of 8.4 MWp. “These panels have a huge advantage in terms of production. They generate electricity from direct sunlight, hitting the solar cells directly; and from indirect sunlight, reflected from the ground onto the rear of the panels. The more reflective the ground, the more electricity is produced from indirect sunlight,” Adelino Barbosa explains. ▶

The wind farm has a total installed capacity of 11 MW. The solar PV power plant has an installed capacity of 8.4 MWp.

All the data generated by this PV power plant is provided by the boxes (called “cores”) found in each row (or “string”) of panels: “The inverters send out signals about the condition of the panels and the amount of energy they are producing,” explains the project manager.

For everything to work perfectly, both the wind farm and the solar power plant require daily maintenance. And that poses additional challenges from a technical and operational point of view. According to Tiago Viegas, Head of Operation and Maintenance at EDPR Portugal, “There are jobs that have to be done on a PV power plant. In this case, because of the steep terrain, maintenance tasks (trimming vegetation, cleaning panels, and even replacing panels and inverters) are a big challenge. It isn’t easy to move around the plant and transport those components.”

This union between wind and solar is a significant upgrade when it comes to the production of renewable energy. “We have practically doubled the capacity of the power plant by installing the solar project on the same infrastructure as the wind farm. We were feeding into the grid about 25% of our installed capacity and now we are close to 50%. This is obviously an key factor in accelerating the energy transition,” explains Duarte Bello, Chief Operating Officer for Europe and Latin America at EDP Renewables.

This hybridization project can produce a combined total of 39.5 GWh/year, enough to supply electricity from renewable sources to more than 30,000 people. This is clearly beneficial to the residents of Sabugal, says Vítor Proença, the mayor of the town. “Our municipality is committed to renewable energy, to the challenge that we are currently facing, given the current economic situation, and the country’s energy strategy. We are well ahead of the curve when it comes to renewable energy,” he says.

Hugo Costa, EDP Renewables’ Country Manager for Portugal, confirmed that EDPR is also strongly committed to the municipalities that are home to its projects: “Sabugal is no exception and we have a memorandum of understanding with the municipality. We provide significant support — and we hope to step up our relationship in future.” ▶

3 questions for...

Duarte Bello

COO for Europe and Latin America at EDP Renewables

1. Why is this project important?
It has allowed us to double our net power output. With the wind farm alone, we were using 25% of capacity; now, with the solar panels, we are already close to 50%. This is obviously a key factor in accelerating the energy transition, because we are better able to harness the potential of our resources using the same infrastructure. At a time like this, when generating renewable energy is increasingly important, this complex is a symbol of what we are doing in the Iberian Peninsula to use what is already there.

2. How long did it take to build this complex?
This was one of the very first power plant complexes we started to license for hybridization. The licensing process began more than three years ago, but the actual construction began in early 2022 and was finished by the end of the year.

3. What other projects of this nature does EDPR have in the pipeline?
We started this strategy almost five years ago. This is the first complex in the Iberian Peninsula, but we are starting to build another one in Portugal (with an installed capacity of 18 MW) and three in Spain (50 MW). All in all, we will have about 75/80 MW in new capacity.
If we consider the synergies with the rest of the EDP Group — with all our hydroelectric power plants, especially in Portugal — we are already looking at a portfolio of 1,600 MW in the Iberian Peninsula. We want to develop that portfolio with hybridization over the coming decade.
But although we are moving faster in the Iberian Peninsula, we also have projects in other countries, namely in Poland, Greece, Italy, and the US. And we are looking at hybridization via battery projects, which is a solution that applies in virtually every country.

With regard to the environment, the new hybrid complex will prevent the emission of approximately 18,000 metric tons of CO_2 every year. “Hybridization offers huge benefits, both for the power system and for utilities. It increases electricity production and minimizes the impact of new renewable projects by making use of existing infrastructures,” notes Duarte Bello.

“We identified a number of pilot projects to help us understand where we could start. We wanted relatively small but utility-scale projects where we could combine these two technologies. They have different daily production profiles, which helps us in terms of efficiency. The key is the increased load factor,” says Hugo Costa. He explains how the two technologies are combined: “Consider a scenario in which we have a constraint in terms of how much power we can feed into the grid. We have a wind production profile with more output during the night, with a load factor of around 30%, and a solar profile that is the exact opposite, with peak production during the day and a load factor of around 20%. We are able to reconcile the two technologies by increasing the load factor by 20 p.p. for the same feed-in capacity, from around 30% to 50%.
So it is a significant efficiency gain without the need for grid reinforcement investments,” he concludes.

And so it is. At the end of the day, as the sun goes down — in a region where the climate is unforgiving, always swinging from one extreme to the other — the blades of the wind turbines start turning faster, and solar power gives way to the wind. //

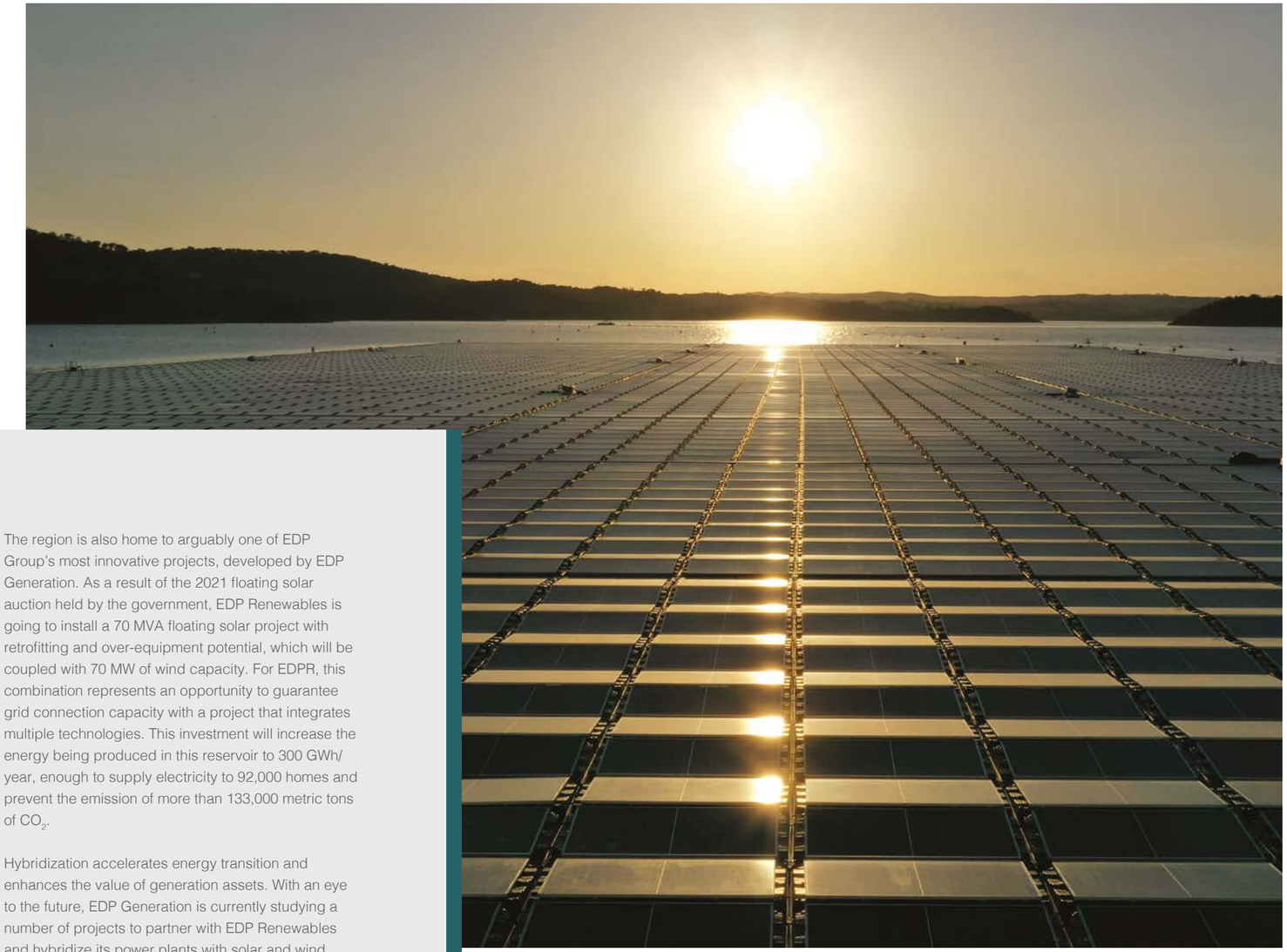
EDP Group hybridization projects

Always one step ahead, the EDP Group already has several hybrid projects in operation, with several others under development or being studied. Discover some of them.

PORTUGAL

| Rabagão reservoir pilot project

The combined use of floating solar and hydroelectric power in Portugal began in 2015 — with a pilot project developed and implemented by EDP Generation in partnership with EDP Renewables and EDP Comercial — at the Rabagão reservoir, in Montalegre. The project tested the compatibility of the two technologies, as well as the environmental and economic advantages. The floating platform had an installed capacity of approximately 220 kWp and an estimated annual output of around 300 MWh. The success of this project was a springboard for the construction of Europe's largest floating solar power plant on a reservoir. And it was the basis for the concept of hybridization that led to the first piece of legislation on hybridization, in 2019, and the creation of the floating solar auction, in 2022.



| Alqueva Floating Solar PV Power Plant

Officially inaugurated last July, the Alqueva Floating Solar Power Plant is Europe's largest floating project on a dam reservoir. With around 12,000 solar PV panels, the floating platform takes up 4 hectares — the equivalent of 0.016% of the total area of the Alqueva reservoir. The project has an installed capacity of 5 MW and can produce 7.5 GWh/year, enough to supply electricity to more than 30% of the families in this region of southern Portugal (Portel and Moura). The project developed by EDP Generation represented a total investment of €6 million.

The hydro–solar solution includes an energy storage system with a nominal capacity of 1 MW and a storage capacity of approximately 2.5 MWh. All of it uses a single connection point to the existing grid, enabling resources to be optimized for efficiency with the least possible impact (read full article on the intranet). This battery can hold up to 10% of the floating power plant's daily production.

The region is also home to arguably one of EDP Group's most innovative projects, developed by EDP Generation. As a result of the 2021 floating solar auction held by the government, EDP Renewables is going to install a 70 MVA floating solar project with retrofitting and over-equipment potential, which will be coupled with 70 MW of wind capacity. For EDPR, this combination represents an opportunity to guarantee grid connection capacity with a project that integrates multiple technologies. This investment will increase the energy being produced in this reservoir to 300 GWh/year, enough to supply electricity to 92,000 homes and prevent the emission of more than 133,000 metric tons of CO_2.

Hybridization accelerates energy transition and enhances the value of generation assets. With an eye to the future, EDP Generation is currently studying a number of projects to partner with EDP Renewables and hybridize its power plants with solar and wind power technologies.

| Monte de Vez Solar PV Power Plant

This year EDPR will build a photovoltaic power plant next to the S. João wind farm in Monte de Vez, split between Penela and Ansião, with about 37,000 photovoltaic panels and an output of 21 MW. Taking advantage of the complementarity of wind and solar resources, the photovoltaic plant will hybridize the S. João wind farm, using the existing grid connection infrastructure. It is estimated that the solar plant can operate for 35 years, a period in which it will avoid the emission of more than 350,000 tons of carbon dioxide into the atmosphere.

SPAIN

In Spain, EDPR has four hybridization projects under construction that will create an additional net power output of more than 85 MW. All four are hybrid wind-solar projects.

| Castillo de Garcimuñoz

Located in the province of Cuenca, this wind farm consists of 17 wind turbines and has an installed capacity of 25.5 MW. The construction of a solar power plant, which will provide an additional 20.11 MW, is already in progress. The hybrid complex will have a total power output of 45.61 MW.

| Cruz de Hierro

Located in Ávila, the Cruz de Hierro Wind Farm consists of 22 wind turbines with a total installed capacity of 14.25 MW. The construction of a solar power plant will add another 14.25 MW. The hybridization project will bring the total installed capacity of the complex to 28.77 MW.

| Villacastín

Located in Segovia, the Villacastín Wind Farm has 22 wind turbines and an installed capacity of 14.52 MW. Earlier this year, EDPR started the construction of a solar project with 13.75 MW, which will increase the total output of the complex to 28.27 MW.

| Las Lomillas

The Almeria Wind Farm, which boasts 33 wind turbines and an installed capacity of 49.50 MW, is also slated for hybridization. The construction of the solar power plant will add another 38.95 MW and is scheduled to begin in the second quarter of 2023. Once it is completed, the hybrid complex will have a total power output of 88.45 MW.
In Spain, EDPR is investing heavily in hybridization. The company is already preparing two more projects (Sierra del Boquerón and Rabosera), with 12 others under development — some more advanced than others.

ROMANIA

The Bailesti Solar Power Plant (solar+battery) and the Cobadin Wind Farm (wind+battery) were the first hybridization projects in Romania. In both cases, EDPR had batteries installed as pilot projects to study their performance and determine best practices for use. Several other projects are currently under development.

| Cernavodă Wind

EDPR has two wind farms in Cernavodă that have been in operation since 2011. Each wind farm is connected to a separate grid connection point and has a 69 MW interconnection license. “For phase one, we are considering hybridization with a new 20 MW solar PV project, which is in the development phase.”

| Făcăeni I+II and Giurgeni

The Făcăeni I Wind Farm, with 132 MW, has been in operation since 2015. An extension project (Facaeni II) is currently under development. It recently secured the interconnection license for an additional 99 MW. The Giurgeni Solar Power Plant is also currently under development, with a planned capacity of approximately 150 MW. “We are now considering the hybridization of both projects — without exceeding the 231 MW of our existing interconnection license for Făcăeni I+II,” explained Andrei Rapeanu, EDP Renewables’ Country Manager for Romania.

| Beta Wind

This wind project, which is currently in development, has secured an interconnection license for 151 MW. “We are looking into the possibility of hybridization with a new solar PV project with approximately 130 MW,” says Andrei Rapeanu.

| Negrilesti

This 49 MW wind farm has recently secured its interconnection license and is expected to achieve RTB (ready-to-build) status in the coming months. EDPR is looking into the possibility of adding a new 25–30 MW solar project to this wind farm so as to improve its profitability and optimize the capex for the grid tie-in operations. “We are in talks with the owners of parcels of land around the park to secure the additional area needed for the development of the solar PV project,” said the country manager. The company is also considering other hybridization projects for its wind farms currently in operation in Romania: Peștera (90 MW); Vutcani (52 MW); Sarichioi (33 MW); and Cobadin (26 MW).