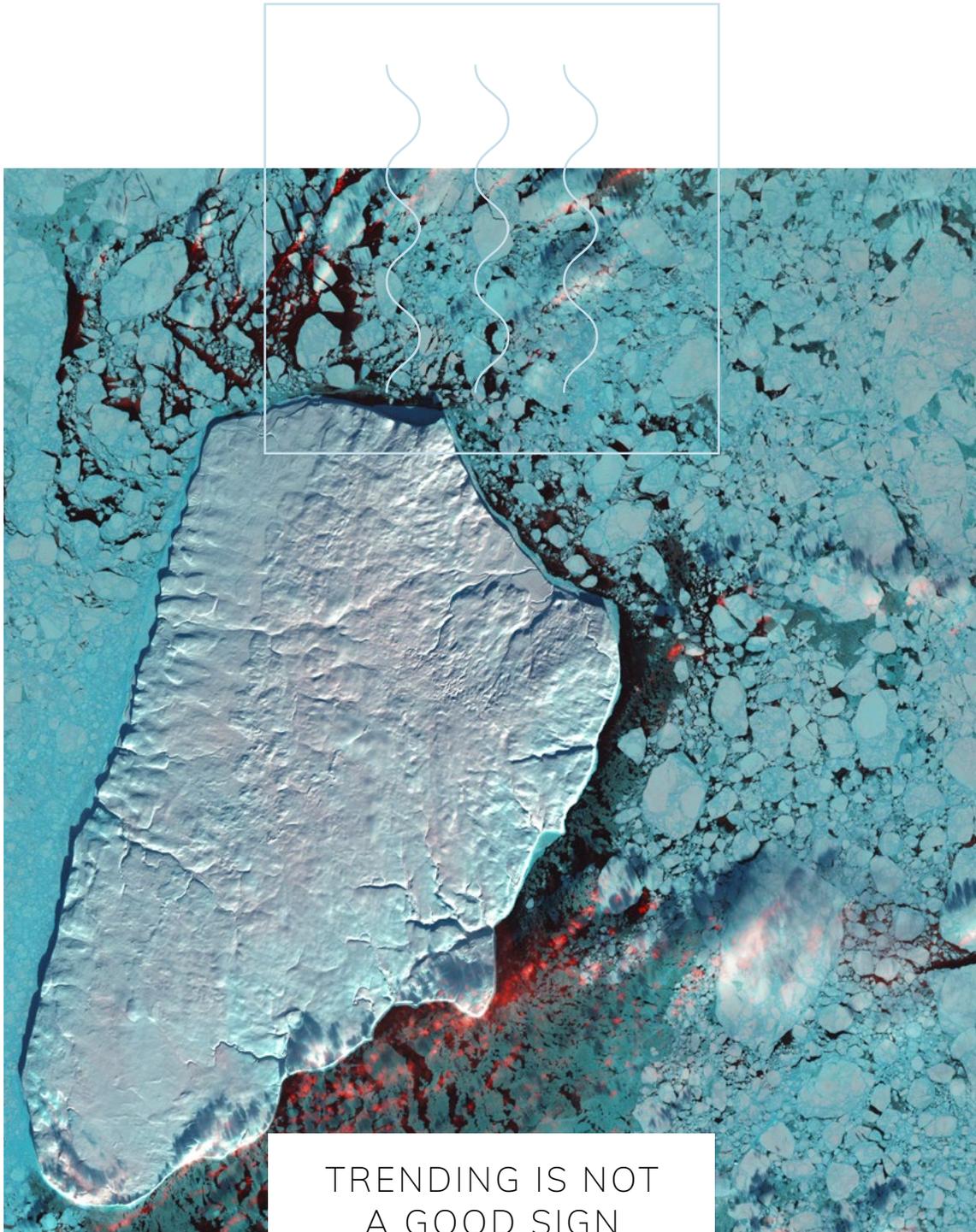


# F O O T P R I N T

SUSTAINABILITY IN REVIEW



TRENDING IS NOT  
A GOOD SIGN

December 2020

*edp*

# Sustainability is trending and that's not a good sign



It means that humanity, as a whole, has failed the ecosystem that created, nurtured and protected us. We rushed into an unbridled race in the name of progress, without giving much thought to long-term consequences.

The milestone we have reached is not the one we had hoped for: we have lost 60% of biodiversity on Earth, some 789 million people are still without access to electricity, the ecological debt accumulated through overconsumption of natural resources is equivalent to 18 Earth years. Climate change is a certainty. We must reverse this reality and run this marathon until 2050, with decarbonization and innovation acting as the lungs that power our efforts to achieve the goal we all aspire to.

The European Union is firing the starting shot by mobilizing more than a billion euros in sustainable investment over the next decade. Mechanisms, such as just transition, seek to mobilize private and public resources to drive our transition toward a low-carbon economy are essential milestones along this path. At the same time, they aim to protect the citizens and workers who are most vulnerable to that transition. And this time our pace must be deliberate with firm and realistic goals, but also with innovative ideas and a healthy debate around the pressing issues of sustainability.

This is the reason behind the birth of Footprint.

A format which aims to deconstruct the myth that sustainability is all about the environment and provide a holistic view of the subject, by sharing different EDP Group initiatives and turning the spotlight onto different specialists from diverse areas ranging from fine arts to agriculture. In this first issue, you will be able to read about the challenge to reach carbon neutrality by 2050 by fighting climate change, from both the corporate point of view and the end-consumer's perspective.

In a year that has been marked by an unpredictable pandemic, it is vital we reflect on social development in the communities that need it most in order to promote sustainable growth. The 672.5-billion-euro European fund for post-pandemic recovery is one of the weapons in this battle, with the pandemic forcing us to rethink our business models and the way we work and live. The pandemic may have brought a momentary and illusory boost to the reduction of air and water pollution, but the Decade on Biodiversity—which culminates in 2020—had already been hijacked by the pervasiveness of plastics in the oceans and massive deforestation in key locations such as the Amazon. It is therefore important we talk about the circular economy as a crucial instrument to protect the environment and uphold the European Green Deal.

In the end, innovation cannot simply be a pretty buzzword; it must be the engine that drives the entire vehicle. We are living in an era that urges us to adopt a multi-technological approach that includes smart grids, searching for energy storage and, most importantly, not being afraid to take short-term risks to succeed in the long run. Projects like offshore wind farms and disruptive solutions like green hydrogen, which are increasingly economically viable, are at the center of this concept.

The importance of listening to others and being attentive to their expectations is one of the key ways in which the EDP Group, and society as a whole, can evolve along an ambitious, complex, non-linear and, of course, sustainable path. We invite you to explore these ideas and more in this inaugural issue of our magazine. Let them be the footprints that guide us toward a 2050 that is only utopian if we choose not to believe in it. For our part, we don't just believe in this mission, but are already working together toward change.



**António Martins da Costa**  
Executive Board Member  
Head of Sustainability at EDP

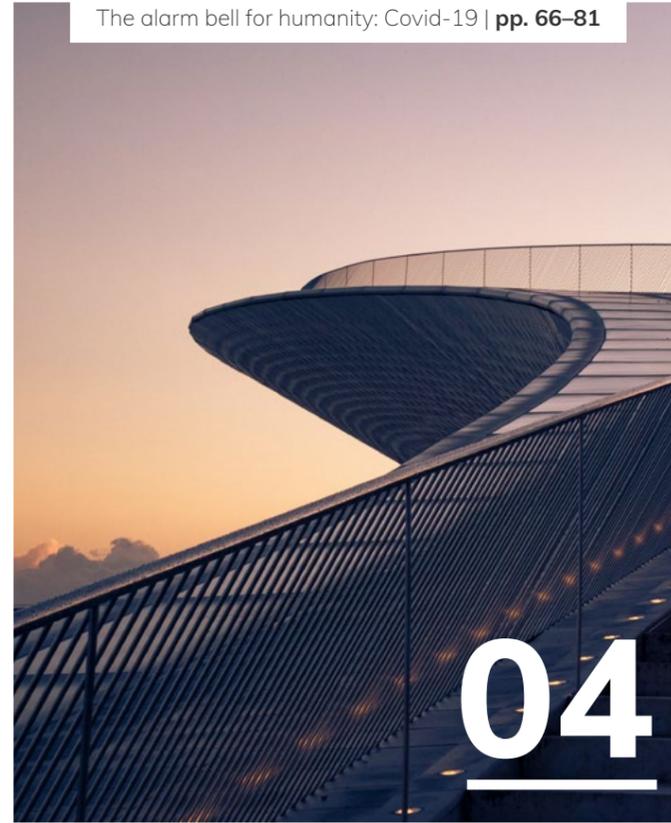
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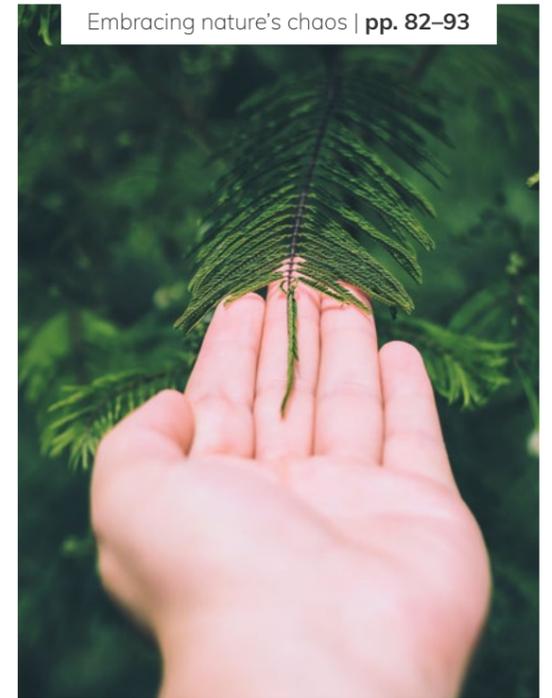
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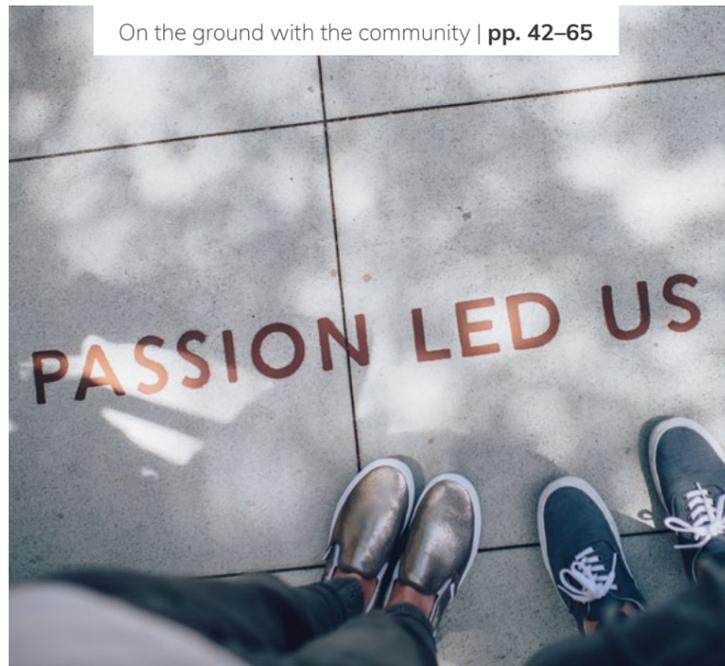
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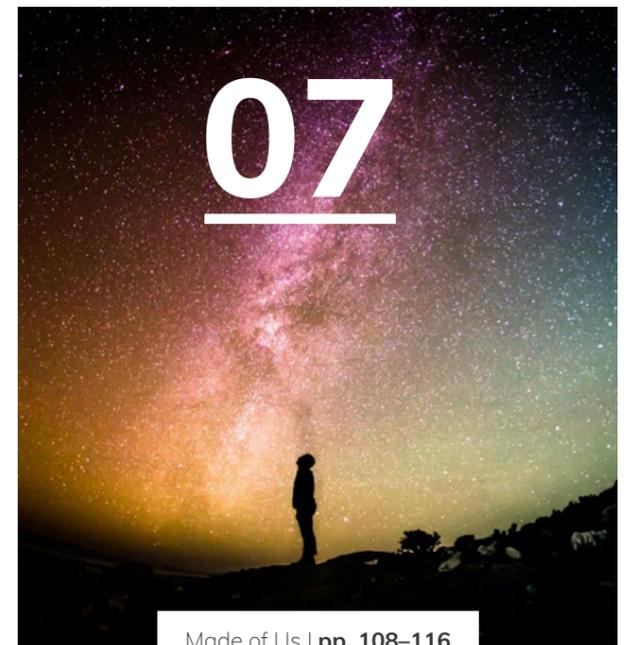


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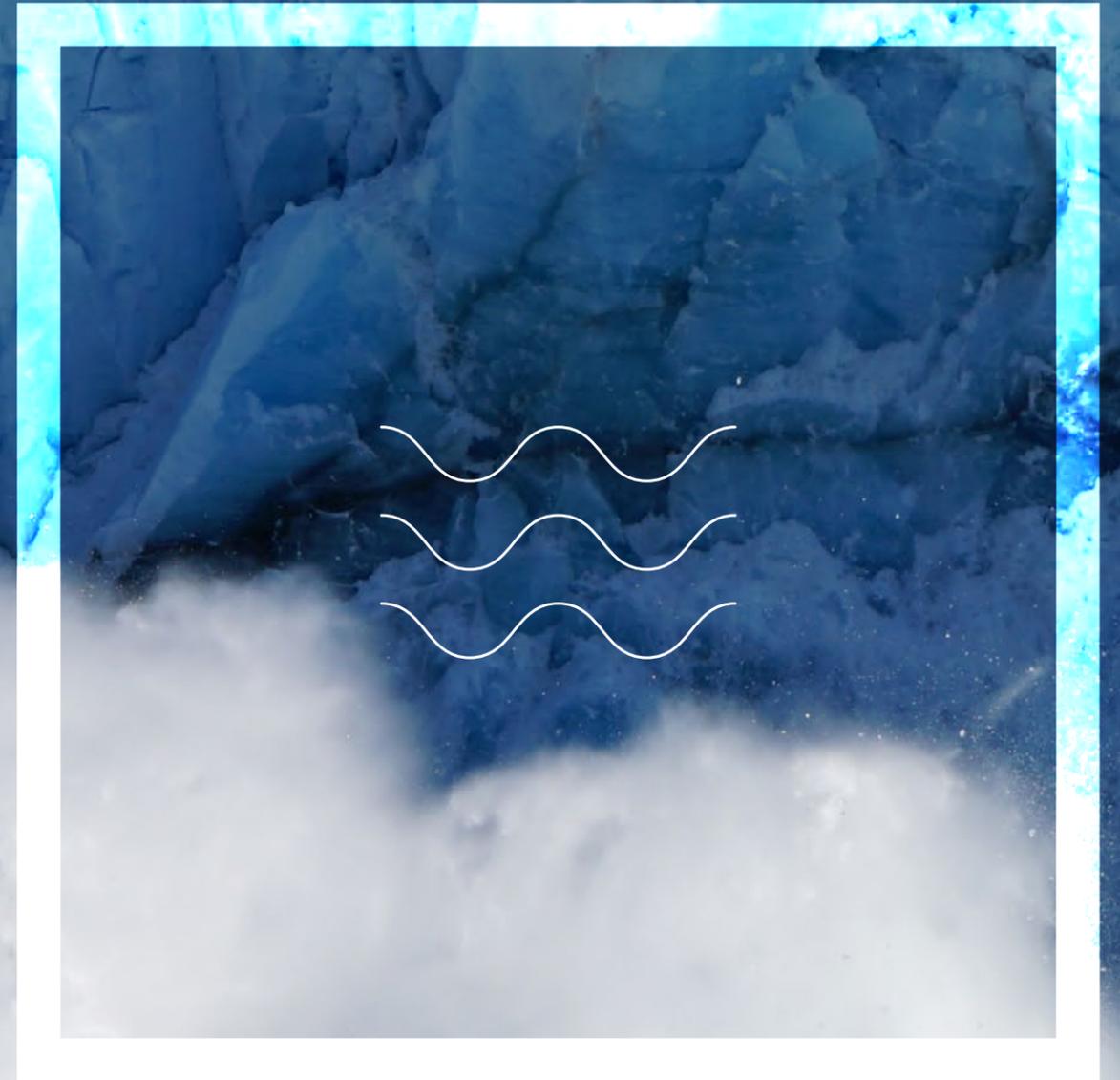
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# 01

The certainty  
of climate change



“

Climate change is a fact.

Barack Obama



Bordalo II

The artist who brings waste to life

Artur Bordalo, visual artist from Lisbon, creates and recreates using the trash that society tends to ignore. A form of art that is shared throughout the world and which the author intends to be the vehicle for a universal manifesto: to challenge attitudes and behaviors and—who knows—maybe their subsequent transformation and evolution.



Mouse Lemur Work in Progress  
ACCORD DE PARIS solo show | Paris, France (2019)  
© Miguel Portelinha

**Where did the idea to make art out of waste come from?**

I studied Fine Arts, which allowed me to discover sculpture and experiment with different materials. This ended up pushing me past my initial intention, which was painting. At some point, I started experimenting with trash, exploring different subject matters and compositions, but it became a natural path for me.

**When did you realize that you wanted to make this kind of art—resorting to used materials, and with this perspective of ecology versus consumerism?**

This journey and my experiences with materials came together in a piece I did in 2013 for Walk&Talk in the Azores, called “Big Crab”.

**The environmental concern is a part of all your work.**

That environmental awareness has always been there and ended up coming through in my work very naturally.

**What is the main message that you want to convey with your art?**

The idea behind my work involves representing an image of nature, in this case animals, built with the very thing that destroys them: trash, pollution, waste and contamination. Animals are a direct way of portraying nature, because they have expressions, movement and feelings, and they behave in ways that can touch us.

So, they are the ideal subject matter to paint and sculpt when you want to tackle environmental issues.

**What are your sources of inspiration and the main force behind your motivation?**

My grandfather, Real Bordalo, was an inspiration and a teacher. Much of what I learned from him and the values he passed on to me are reflected in my work. In addition to the watercolors for which my grandfather was best known, he also had less well-known series of works that explored surreal and dramatic themes, touching on areas of concern, just as I do in my own work. My references keep changing over the years, but I can mention some names like Steve Cutts, Farewell, Barbara Daniels, Paweł Kuczyński, and the biggest for me, Sebastião Salgado.

**What is your process?**

It is a very unencumbered, freestyle process. I collect the materials, cut them into chunks, and then use an image or reference sketch to compose the piece until it is transformed into what I want. The pieces are prepared to be hung on a wall. If it is an outdoor piece, it is applied directly. I have a team that helps me with larger pieces. The time spent on each piece depends on its complexity and size, and can range from three days to several weeks of work. The materials come from all around: abandoned sites, recycling centers, automobile parts shops, beaches, and even the street. One material that is always present is plastic: I use a lot of broken or damaged bins and trash containers. I enjoy using materials that are discarded by many so that they can be appreciated in a different way, giving them a second chance.



**Do you still remember your first piece and the message you wanted to convey with it?**

Although I didn't create the Big Trash Animals with that purpose in mind, the idea came through experimentation and I quickly figured out what I wanted to achieve. I realized that my concept and environmental awareness needed to be intertwined. I saw the potential of using these materials to create portraits. The materials used give the pieces a different spirit; in this case, my intention is to relate the subject matters to environmental issues. Not to mention the interesting textures and worn-out colors that these materials offer.

**At first, did you have any concerns about how people would interpret your art?**

Many of the things I do don't need to be appreciated for their aesthetics. It may be more interesting to consider what they intend to say. Their value may come from the idea or concept, rather than their form.

**Culture is not always accessible to everyone... That is not the case with your art, which can be seen in several public places around Lisbon, in other cities, and in different countries. What is the impact that you want your work to have on people's lives?**

Art and culture are the foundation on which an entire generation can be transformed. All of these messages are intended to help people think about what really matters, and possibly change something in our world. We already produce more trash than we recycle. I intend to confront the public with this reality in which we live, and make them question their habits, transform their consciousness little by little, and use art as a platform for communication.



Half-Thinking Chimp - ATERRO solo show | Lisbon, Portugal (2017)  
© Bruno Lopes

“Art and culture are the foundation on which an entire generation can be transformed.”

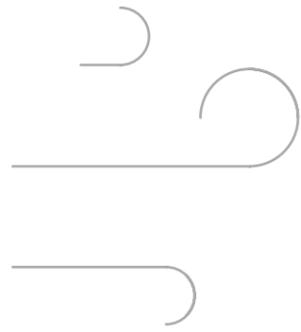
My responsibility is to use my visibility to send out all these messages, to help people think about what really matters. For me, it is crucial to have something to say. It is a waste to work in an area with high visibility and have nothing meaningful to say. And it is great to be able to spread my ideas to different communities and cultures around the world.

**In terms of the future, what are your plans going forward?**

Regardless of what may happen, I hope and will strive to create new and distinctive things, because although it is easy to fall into a comfort zone and continue to make what we know the public likes, I want to be able to let my imagination run wild, talk about different things, tackle different topics, and not get stuck in what the public expects from us.

**In what way has the pandemic affected you?**

It was a great opportunity to pause, reflect, and take some steps back in order to move forward with new ideas that had been left pending for a while because of lack of time.



**Did this lockdown, in some way, help change some of society's behaviors?**

I think the lockdown and that whole situation should serve as an "eye opener" and a reminder that we are not following a sustainable model with regard to the world and nature. So, by forcing us to stop, it gives us the chance to start again in a different direction. By investing in cleaner and renewable energy sources, reassessing the way we work, consume, travel, etc.

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**The world has woken up to reality and we are at a stage where there are plenty of movements that draw attention to and call for action to tackle climate change. How do you see that global wake-up?**

I see it as something that is necessary if the planet is to remain habitable for us and for future generations.

**How do you describe your art?**

Provocative!

Bear  
Torino | Italy (2016)



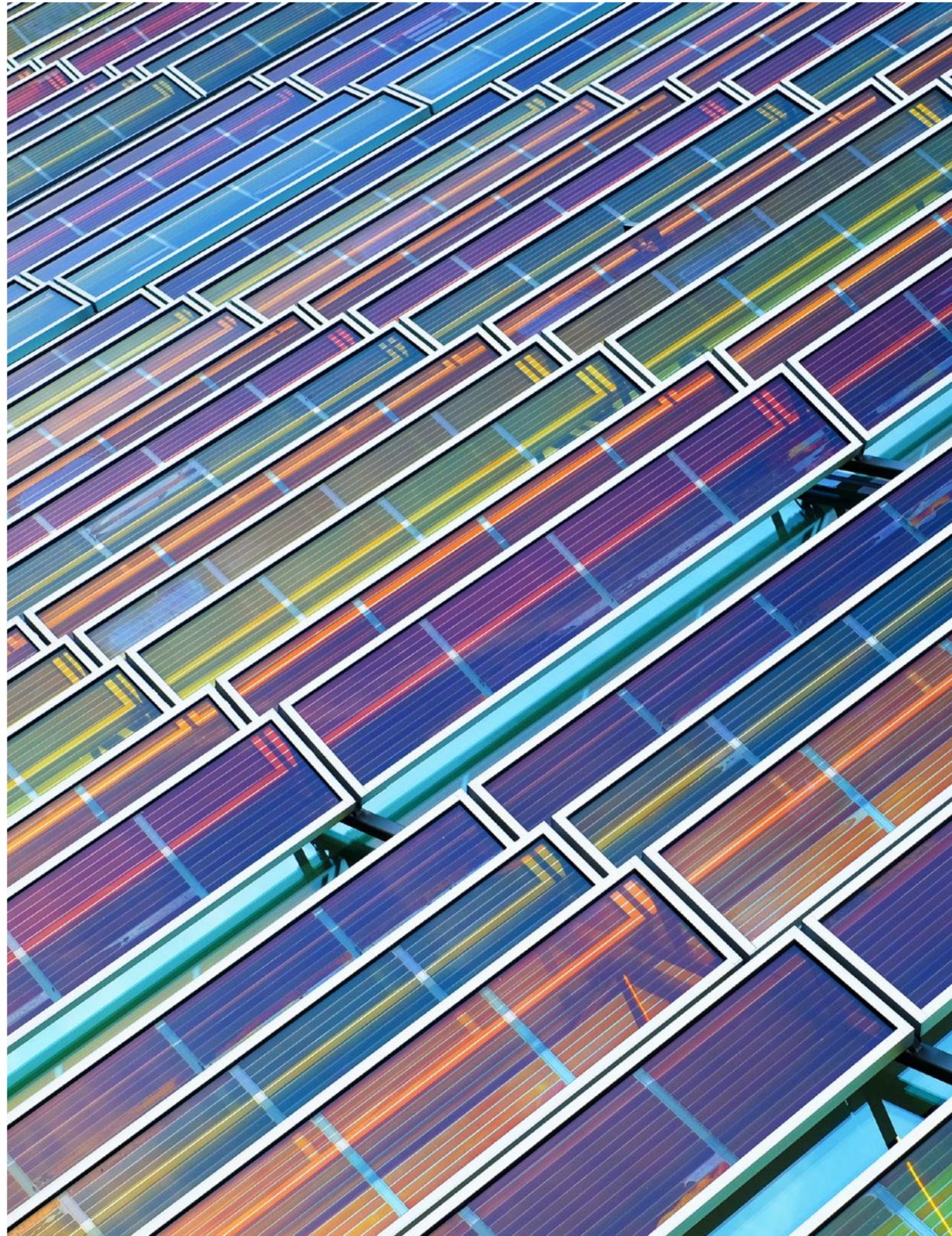
## Before I die

Artur Bordalo (b. 1987, Lisbon) is better known as Bordalo II, a pseudonym he adopted as an homage to his grandfather, painter Real Bordalo, promoting a sort of continuity and reinvention of his artistic legacy. His youth unfolded between the hours spent in the studio with his grandfather—who was passionate about watercolor and oil painting, capturing landscapes and traditional city scenes—and his adventures with illegal graffiti in the Lisbon underworld.

## Biography

He studied painting at the School of Fine Arts of the University of Lisbon without ever graduating, but he says that those eight years allowed him to discover sculpture and ceramics, and experiment with a variety of materials that pushed him past painting—the discipline that had initially brought him there.

The public space would become the chosen stage for his explorations of color and scale, and the platform where he gradually transformed his techniques and channeled his experiences into constructing and developing his artistic work, which currently focuses on questioning the materialistic and greedy society of which he is (also) a part. The excessive production of "stuff" or the overconsumption that results in the continuous production of trash and, consequently, the destruction of the planet, are the core themes of his artistic production. That "trash" takes on the unexpected and unique role as the raw material he uses to build small or large-scale pieces. He shares these creations all around the world and, first and foremost, intends to use this art as the vehicle for a universal manifesto.



# INNOVATION

## for decarbonization

Never before has innovation in the energy sector been so closely related to driving sustainability, particularly in the urgent fight against climate change.

When we talk about innovation, the first thing that comes to mind is technological innovation, whose evolution toward decarbonization has greatly inspired the lofty goals set in 2015 at COP21 under the well-known Paris Agreement. There are plenty of examples within EDP itself—with solar photovoltaics leading a 90% reduction in production costs over the last decade<sup>1</sup>—that prove the competitiveness of renewable versus non-renewable energies. In terms of wind power, EDP currently has more than 10.7 GW of installed capacity, and floating technologies have positioned the Group as a global market leader while opening up a new path for growth. In regions where water

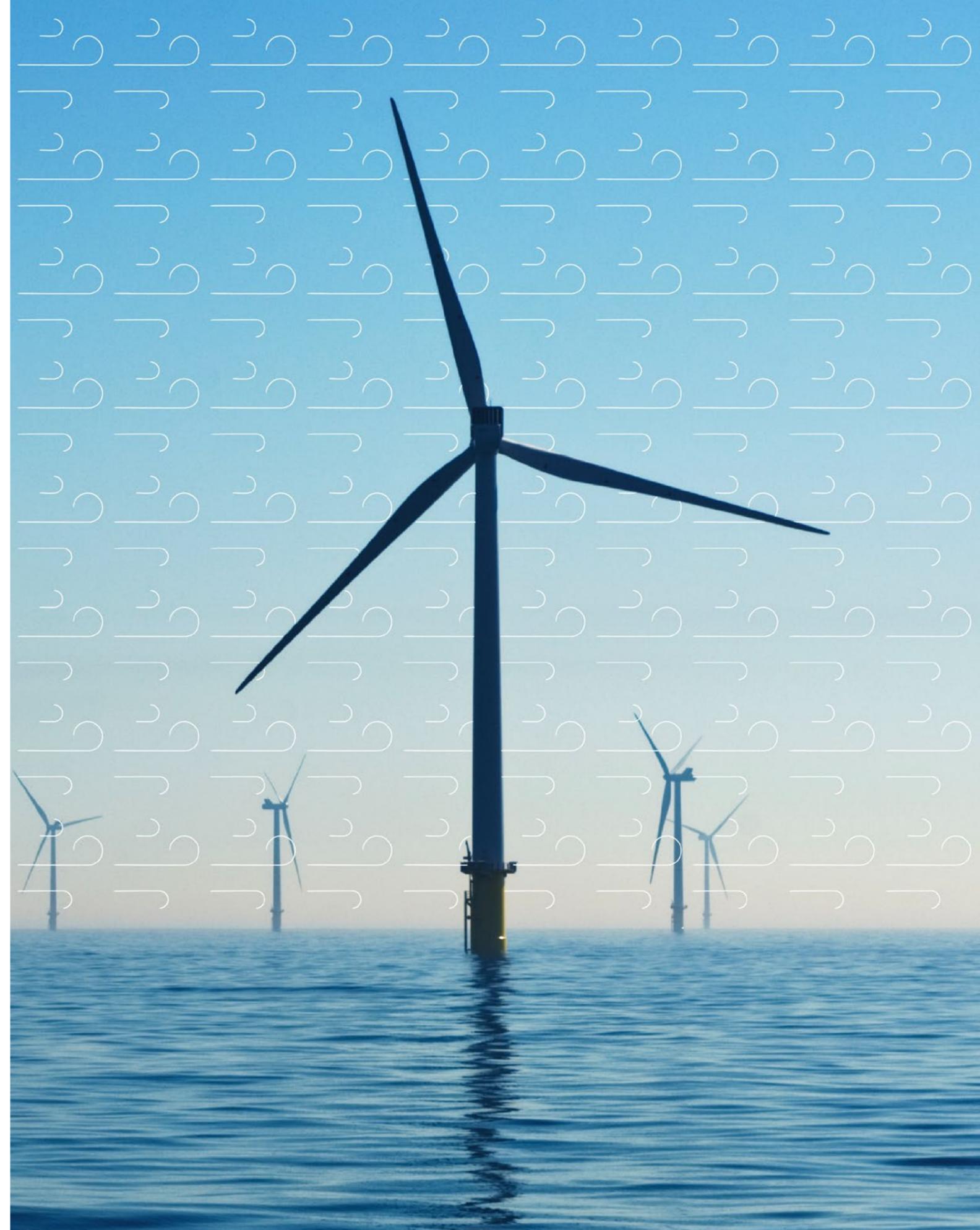
depth near the coastline precludes the use of more mature offshore technology—where turbines have fixed foundations on the seabed—floating wind technologies harness the increased wind energy potential of deep sea areas, extending the global potential for use of the technology tenfold, with a current potential of 36,000 TWh/year<sup>2</sup>. Back on land, batteries are an absolute priority if we want to ensure the decarbonization of transportation, but also manage the intermittency of renewable energy in the electric power system. It is projected that lithium battery prices will follow the same trajectory as solar PV, having already decreased by 85% between 2010 and 2018<sup>3</sup>. These few examples represent developments that surprised everyone, and broke with scenarios established just a few years ago. Why? Because the focus of innovation was not on the technological solutions that can really make a difference in terms of the planet we want to live in. Now it is, and the motivation and resources put at the disposal of these new technologies have increased significantly.

Nevertheless, we are not there yet. The transformation of the electricity sector is key to decarbonizing our economy. While the technologies may already exist, their technical and economic dimensions still lack commercial viability and countless obstacles stand in the way of their implementation.

The International Energy Agency (IEA) has developed a “Sustainable Development Scenario” (SDS), which sets out a vision for transforming the global energy system to meet three strategic objectives listed under the United Nations Sustainable Development Goals: the reduction of CO<sub>2</sub> emissions to levels that would hold the increase in global average temperature below 2°C; universal access to energy; and a substantial reduction in air pollution<sup>4</sup>. In order to meet these objectives, the IEA analyzed 46 technologies considered critical to the decarbonization of the economy. More than a third of the reduction in CO<sub>2</sub> emissions needed for the SDS scenario in 2070 is based on technologies currently at the prototype or demonstration stage, which are not viable without continued investment in innovation. Another 40% of the required CO<sub>2</sub> emissions savings depend on technologies that are yet to be commercially deployed, showcasing the huge challenge that lies ahead.

Green hydrogen has been developed as a supplementary energy source for the electrification of consumption, and is a recent example of a clean solution capable of accelerating the decarbonization of the economy and generating broad international consensus. Its use is already commonplace in some sectors (such as the chemical industry and refineries), but expanding and adjusting existing technologies to other sectors that could benefit from this solution is still a long way off. Many of these technologies are still in the demonstration stage, and strong investments in R&D+I are needed to move this tech along.

Finally, it is important to note that technological innovation is only part of a broader concept, generally defined as a new or improved product and/or process that is made available to its potential users<sup>5</sup>. The energy transition must take advantage of all of these factors. With technology come new processes, new business models and new organizational structures. EDP is following this path, but each one of us as consumers must make the same commitment. Innovate to contribute to a more sustainable world. Innovate at home, in the workplace and in the way we travel. With everyone’s help, we will get there faster.



<sup>1</sup> <https://www.irena.org/costs>

<sup>2</sup> IEA: Offshore Wind Outlook 2019, p. 11; the 700 TWh data comes from EDP Inovação, associated with the WindFloat case study, 2015 (COP21)

<sup>3</sup> BNEF (Bloomberg New Energy Finance)

<sup>4</sup> <https://www.iea.org/topics/tracking-clean-energy-progress>

<sup>5</sup> Oslo Manual

interview with

# Paula Oliveira

entrepreneur



“There is a desire to return to the past, to go back in time and to the old ways of living”

With the support of EDP's Traditions Program, entrepreneur Paula Oliveira has breathed life into a centuries-old tradition which had fallen into oblivion.

The Carrejas project was the winner of the third edition of EDP's Traditions program. What is the Carrejas project? “Carrejas” is the name given to the transportation of rye cultivated high up in the mountains, which after being harvested and threshed is carried down to the villages of Cabril Valley. The thing that motivated us to start this project was the opportunity to breathe life into a tradition that had fallen into oblivion. These were incredible tools, techniques and practices that were at risk of becoming lost. It was essential that we urgently collect, promote and preserve the way of life of a people, their relationship with the mountain, and the harshness of agricultural tasks.

This is a centuries-old tradition that involves the entire community, but it had been halted for 15 years. What was the reason for that interruption? The rural exodus, emigration and the harshness of the tasks themselves were the three main reasons that led to the end of high-mountain rye cultivation.

Considering that this is a tradition that originated long ago, what were the most significant adaptations to modern times? The biggest adaptation had to do with accessibility to the site. In the past, everything was carried up the mountain on one's back (implements, seeds, food, pots, etc.). Now, that transportation is made using



vehicles. The exception was the “carrejada” day, during which some of the seeds, thatch, straw and tools were carried by men and women from the mountains down to the village. Everything else was transported in vehicles.

**How was the community impacted by the Carrejudas project?**

The involvement and enthusiasm of the participants has greatly exceeded our expectations. The presence of RTP1 (Public TV channel), which was not part of our original plans, allowed us to reach a large number of indirect beneficiaries and leveraged the support of the Municipality of Montalegre in maintaining the community herds in the mountains between May and September 2020.

I would take this opportunity to thank EDP’s Traditions Program for enabling the preservation of natural, cultural and social values. And to thank the generosity of those who have joined us in this struggle, as without their support, this would not have been successful.

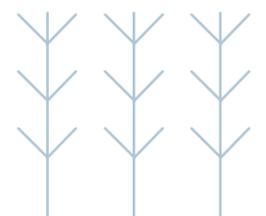
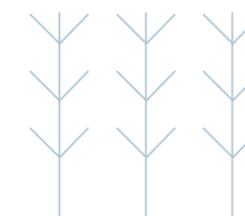
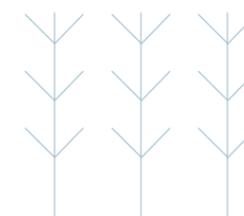
**With the revival of this tradition, did some people return to the rural environment? Are there any accounts of people who have returned to their origins?**

Some of the people who participated in the activities are emigrants who occasionally

come back on vacation. We were having trouble finding someone to host the thatched cap workshop, and a gentleman who had just arrived from Luxembourg said that he remembered making them with his father and was very pleased to show and teach everyone how to make them. This gentleman is still living in the village and now only goes to Luxembourg from time to time.

**The agricultural tasks bear witness to the way of life of a people who have always lived and survived with few resources and in a constant struggle against the forces of nature. In addition to these factors, there is also the fight against climate change—namely, high temperatures and lack of rainfall. In what way was that change felt in the activities?**

A major change was that we felt the need to use more mechanical means instead of animal traction. We were able to do the “bessada” (plowing the ground over the course of day, before sowing the seed) with donkeys instead of oxen—as was tradition—because oxen have stopped being put to work to make way for tractors. Climate change is not so clearly felt in the high mountain yet as it is in the villages. After the late-summer sowing, the seed hibernates in the winter and only germinates in the spring.



**What is the general perception of the community about climate change?**

**Do they still think that there are well-defined seasons?**

The most significant climate variations interfere in the crops growing near the villages, affecting the production of fruit and vegetables. Some agricultural activities normally carried out in May (we call the cultivation of potatoes, corn and beans, “May sowing” for that reason) have started to take place in April.

**In the times in which we live—with the emergence of this pandemic—do you think people are more inclined to rediscover memories and traditions? Why?**

This pandemic has confirmed the fact that we are ephemeral and highlighted the importance of caring for our elders as well as respecting others, their knowledge and experience. I think that there is a desire to return to the past, to go back in time and to the old ways of living.

**What motivated you to revive this centuries-old practice?**

I am passionate about culture, about people and places. I love to listen to stories and anecdotes and the story of the “carrejas” was told to me in such a moving way that I was able to envision and feel the joy of these people, and the need to preserve that tradition for the coming generations. From that day on, I have wanted to bring the “carrejas” back, as a token of appreciation and recognition to our ancestors.

**What was your academic and professional background prior to this?**

I have a degree in Portuguese and Lusophone Studies from the School of Social and Human



“I was able to envision and feel the joy of the people and the need to preserve that tradition for the coming generations”

Sciences of the NOVA University of Lisbon and a Master in Management of Cultural Projects from the University of Alcalá, Madrid. My earliest certificate in rural and sustainable development dates back to 1994.

**Is there any piece of advice or message that you would like to leave to urban populations?**

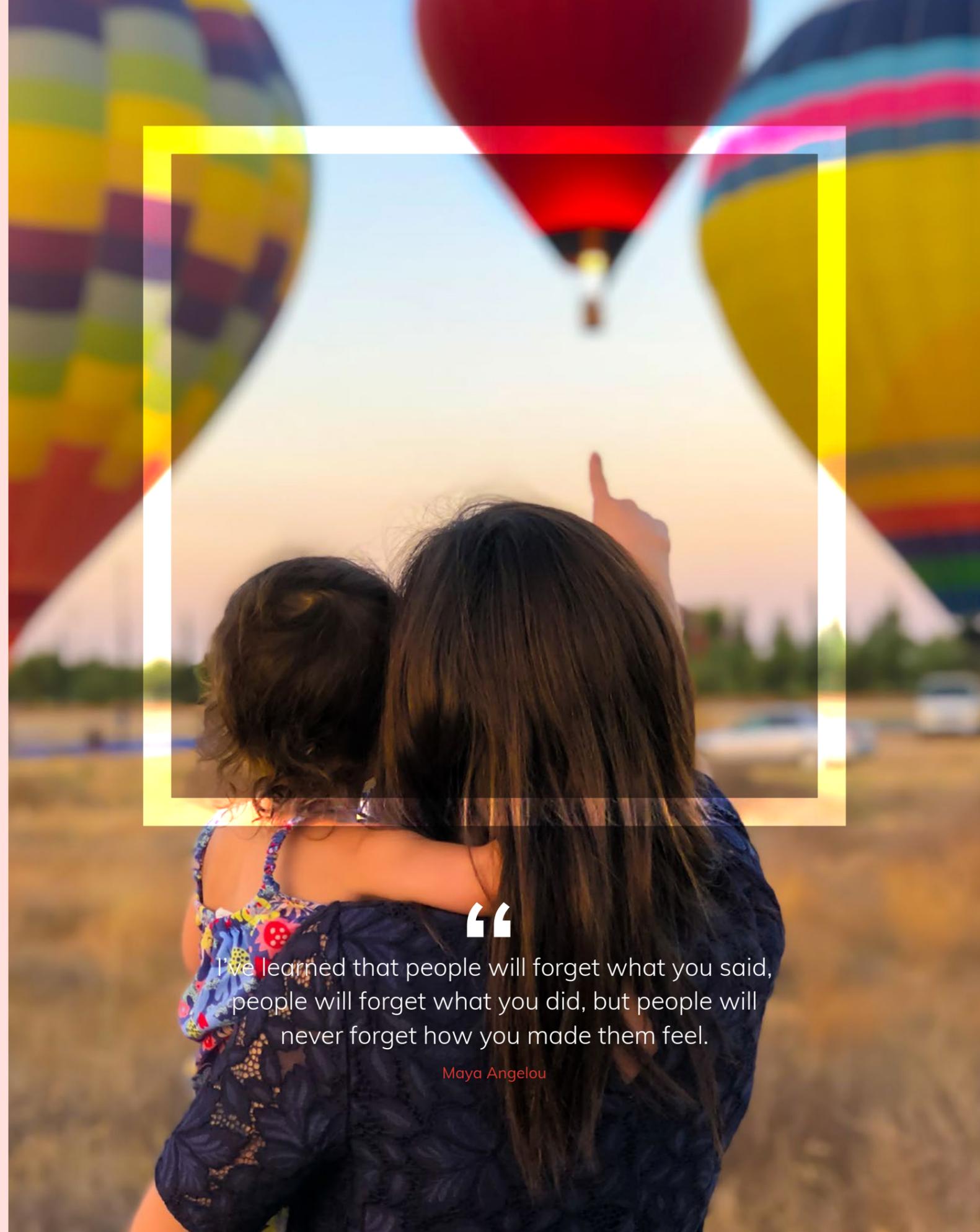
I was born in Lisbon and lived there most of my life. The rural world was introduced to me by my maternal grandmother. She taught

me to care for the land, to respect all people, to share. As a young girl, it was amazing for me to be able to eat food harvested from the garden. These were products that my grandmother’s friends—all of them farmers—worked hard to create, each and every day, rain or shine, hot or cold. It is very important to recognize the value of those who work the land and feed us.

It is vital to support these people and consume responsibly. In the end, all things are fleeting.

# 02

We are all customers



I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel.

Maya Angelou



# CARBON NEUTRALITY and energy efficiency

Achieving carbon neutrality before the end of the century is one of the goals of the Paris Agreement. But what is carbon neutrality and what can countries, companies, and individuals do to help achieve it?

Carbon neutrality means reducing greenhouse gas emissions responsible for climate change—particularly carbon dioxide (CO<sub>2</sub>)—as much as possible, and offsetting the unavoidable emissions through carbon sinks (reforestation and land-use change or other carbon sequestration measures).

Portugal has undertaken a commitment to achieve carbon neutrality by 2050. To this end, it has developed a long-term strategy based on a low-carbon path for the Portuguese economy, as well as on a series of targeted measures laid out in the Roadmap for Carbon Neutrality (RNC 2050: [shorturl.at/jDI07](https://shorturl.at/jDI07)). EDP has also pledged to invest in the generation of clean electricity, cutting down CO<sub>2</sub> emissions and striving to achieve carbon neutrality well before the middle of the century, in the framework of a declaration signed in 2019 by the CEOs of more than 50 Eurelectric member companies.

The transition to a low-carbon economy will have to be fair, cost-efficient, and based on providing safe and affordable energy for all. From this point of view, the energy sector—exactly the one which has contributed the most to increase greenhouse gas emissions—will now play a crucial role in this shift in the energy paradigm, on two levels. On the energy supply side, through the decarbonization of electricity production, by replacing the most polluting energy sources—fossil fuels—with renewable energy sources. And on the energy demand side, through the electrification of consumption, with solutions that are more efficient than the current ones, namely in the transport sector, in industry, and in the environmental

control of buildings, thereby promoting decarbonization and improving the efficiency of end-use energy consumption.

It is easy to understand the importance of energy efficiency in combating climate change and, at the same time, in providing concrete benefits to society by creating jobs, improving the convenience and efficiency of the system, and, just as importantly, supporting low-income families who need it most, contributing to the reduction of energy poverty.

Let's look at the solutions that EDP offers its customers in the various countries where it operates, in terms of energy efficiency. For more than a decade, EDP has been providing energy products and services—diversified and tailored to the different consumer segments—which contribute to the streamlining and reduction of consumption and, as a result, to the improvement of energy efficiency: more efficient equipment, lighting, and household appliances; distributed generation based on solar photovoltaics; promotion of electric mobility, energy certification, and consumption management systems, among others. EDP has set a target of a cumulative reduction in consumption of 5 TWh between 2015 and 2022.

It is worth mentioning two of the initiatives which have contributed the most to improving energy efficiency and in meeting that target: the Save2Compete program, which promotes the improvement of competitiveness and innovation of companies, particularly SMEs ([www.edp.pt/empresas/servicos/save-to-competite](http://www.edp.pt/empresas/servicos/save-to-competite)); and the Consumption Efficiency Promotion Plan (PPEC), promoted in Portugal by ERSE (<https://www.erse.pt/eletricidade/eficiencia-energetica>).

Save2Compete is based on an innovative business model, in which the beneficiary company does not need to invest, but instead repays the investment with the savings generated over time by the measures implemented. Since its launch in 2012, the program has already yielded savings of over 300 GWh, avoiding the emission of approximately 115 kt of CO<sub>2</sub>.



In the case of PPEC, EDP has been the main sponsor of this voluntary program, having participated since 2007 and implemented more than 70 projects, between tangible and intangible measures, which have resulted in total accumulated savings of approximately 2 TWh of electricity, avoiding the emission of more than 800 kt of CO<sub>2</sub>.

Promoting energy efficiency and end-use consumption of electricity are therefore key solutions to mitigate climate change and contribute to carbon neutrality. It is up to the various states, by establishing coherent energy policies, to lay the foundations and the pathway for achieving this goal. The private sector is asked to take advantage of the business and job-creation opportunities provided by this framework by offering its customers the most efficient services and products. Lastly, by adopting more efficient behaviors and measures in the use of energy, citizens in general benefit from the reduction of their energy bills and improved convenience.



# SUSTAINABLE MOBILITY

a new wave of necessary innovation



**José Manuel Viegas**  
Chairman of the Environment  
and Sustainability Board at EDP  
Full Professor at Instituto  
Superior Técnico (retired)

Although the situation in most countries with regard to the four objectives of “Sustainable Mobility for All” (<http://sum4all.org/>)—universal access; efficiency; security and safety; and low environmental impact—is far from satisfactory, real progress has been made in all of them since the start of the 21<sup>st</sup> century. This progress is based on innovations that are partly technological and partly organizational and business-model related, allowing for the identification of pathways for systematic improvement, albeit at different speeds and with different approaches in different countries.

Georeferencing, digitalization and electric traction are the main vectors on the technological front, which correspond to car-sharing solutions and flexible services on the business front. The automation of road transportation—whose penetration has been gradual and varies according to the complexity and discipline of the movements surrounding its infrastructure—will bring us closer to those objectives, but it will also have implications on the organization of mobility demand.

Nevertheless, the COVID-19 pandemic has alerted us to the vulnerability of the current transportation system in the face of a risk which was not on the minds of most decision makers: it is clear that public transport systems in urban areas—the backbone of the response to the goal of universal access—are designed and scaled to operate with on-board densities which are in no way compatible with the best practices of social distancing, and are therefore a factor in contagion. Similarly, air passenger transportation, a key in economic integration and tourism, can only be economically viable on the same scale as it has been; with very high on-board densities.

We must therefore give serious thought to how to redesign our transportation systems. In addition to the four stated objectives,

we must also consider the resilience of the systems against their main risks of disruption: certainly a pandemic—this one will not be the last—but also extreme weather events, the intensity and frequency of which have been increasing. And it may also be worth considering the disruption of satellite systems, whether due to natural causes or (most likely) belligerent acts.

For transportation systems to be resilient, we must ensure that they are always capable of maintaining a minimum satisfactory level of performance, and that they have the capacity for rapid overhaul and cost-effective recovery. It does not take very deep reflection to conclude that they are currently very far from this goal, but the fundamental role they play in people’s lives and in companies’ activities, as well as their perceived exposure to those risks of disruption, warrant making this objective a very important one.

A significant innovation effort focused on that objective is essential if we are to overcome the dominant paradigms and avoid serious problems associated with those disruptions.

Interview with

# António Coutinho

Executive Board Member of EDP Comercial

“We must change the way we consume energy.”

The energy transition is made not only with the decarbonization of electricity production, but also with the electrification of our consumption. Electric mobility, one of EDP's major goals, is one of the best examples of this.



**Is energy transition a trend or is it an already-established reality?**

Energy transition is far from being an established reality. There are people who talk a lot about this subject, but who are not quite aware of what it actually means. We know that energy transition involves abandoning the use of fossil fuels. And the alternative—electric renewables—are the renewable energy sources with the largest scale and lowest cost. Electricity consumption represents 22 percent of our total energy consumption. This means that, even if we completely decarbonize all electricity production, we will have decarbonized only 22 percent of the economy. Thirty years ago, electricity represented 18 percent of all energy consumption. Now, in order to achieve 95 percent decarbonization by 2050, our electrification rate will have to be about 70 percent. Just consider the challenge: in the last 30 years, we have gone from 18 percent to 22 percent; and in the next 30 years, we are going to go from 22 percent to 70 percent. In other words, energy transition is more than just renewables. The important thing about energy transition is to change the way we consume energy.

**And how do we do that?**

Electric mobility is the simplest and most extraordinary example of what it means to switch from a fossil fuel to renewably produced electricity. When we move from an internal combustion car (which uses fossil fuel) to an electric car, we reduce our energy consumption by around three or four times. Therefore, it is not just a matter of switching our consumption of fossil fuels to renewables. When we transition to electricity, we also increase our energy efficiency. Then, decarbonization becomes easier. If we use less energy, we will need less renewable energy to do the exact same thing we were doing before.

**Is electrical consumption always the most sensible option?**

An electric engine, for example, consumes much less energy than a combustion engine. Contrary to what we may think, a combustion engine is very inefficient: for every five liters we burn, only one liter ends up powering the wheels; the rest is lost in the form of heat. That is the great paradox. We must electrify our consumption, because by doing so, we are helping make it entirely emissions-free, while at the same time significantly reducing our total energy consumption.

**Is electrical mobility still only for a few or is it already accessible to all?**

An electric car is expected to cost as much as an internal combustion car by as early as 2022–23. If we look at today’s reality, that is already happening to some extent. If we take into account the total cost to own (including purchase price and operation costs), owning an electric car can be more economical than an internal combustion

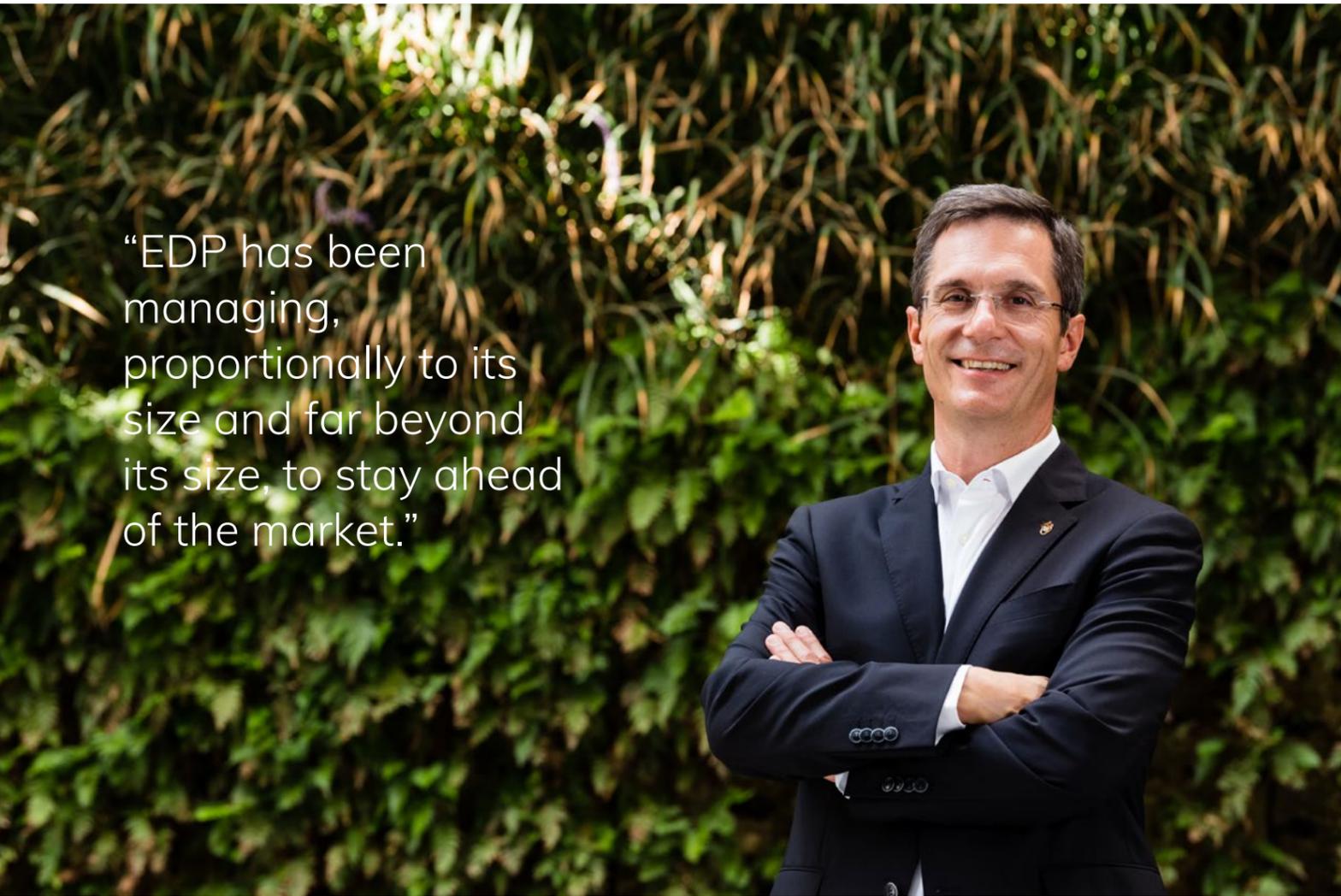


car. Although there is still some way to go, electric mobility will become more widespread and, eventually, it will become the logical choice for any customer.

As far as Portugal is concerned, the drop in the sale of internal combustion vehicles due to the effects of COVID-19 was accompanied by a growth in the sale of electric vehicles. In Europe, we are the fifth country with the highest penetration of electric vehicles, with Norway leading the way.

**Why are we so well positioned?**

The Portuguese people are generally quick to embrace new technologies—they are always at the forefront. The number of models on the market is



“EDP has been managing, proportionally to its size and far beyond its size, to stay ahead of the market.”

still relatively small (just over 20), but in the next two or three years, we will see an increase in the order of a hundred new models.

The manufacturers themselves are mainstreaming this process, offering more choices, cheaper prices, better tax incentives, and a more extensive charging network, so it is a process that is developing naturally.

**Is the lack of charging stations still a barrier to making the use of electric cars more widespread?**

EDP is currently working closely with other partners to be able to announce, very soon, that they are confident there are charging stations spread around, which can be used at all times to charge your vehicle.

In that regard, we decided to look closely at the customer journey, starting from the

moment before the purchase of an electric car. We began developing products and services which would be useful at each stage of that journey, trying to understand and address the customer pain points to make this transition process as smooth, easy, and quick as possible.

**Has that study yielded any results yet?**

One of the things we've done that has already won us several awards and international recognition was the development of an app that people can download onto their smartphones. This EV.X app detects when you are in a car and immediately understands what the customer experience would be like if he or she were using an electric car; it is almost like a personal assistant. By monitoring the routes we take and even our particular driving style, the app is able to tell us how many kilometers we have driven, whether or not we would have had to charge the car and when, how much money we would have saved at the end of the month, the reduction in emissions that would have meant, or the equivalent number of trees that would have been saved. It's an entirely digital experience.

**Don't these kinds of apps always raise questions about data privacy? How is that issue being handled?**

We have it all in place at the structural level. We do not have access to the exact routes that our customers take. We can only see cluster zones, so that we can identify the most critical areas. This information is very useful to us, because it helps us understand where to place additional charging stations, for example. It is a way not only to provide information to future users, but also acquire data which, while anonymous, will help us provide better services to those consumers.

**We are the only Portuguese company to be part of The Climate Group's EV100 commitment, which brings together multinationals that are investing in the transition to electric mobility. Do you think that EDP is a good role model for other companies?**

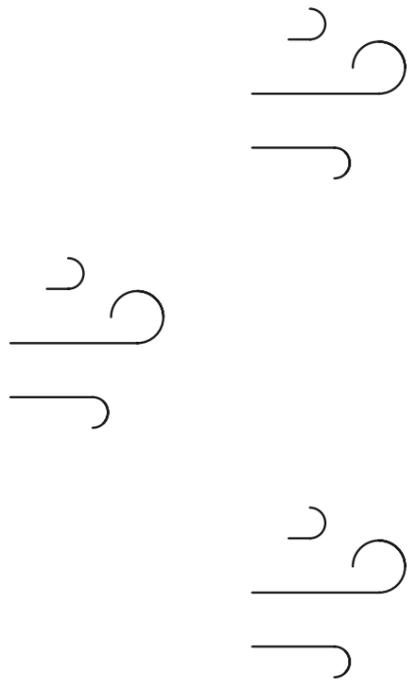
I do not like to talk about other companies; I would rather talk about what we are doing. I think that we, as a company, have always positioned ourselves by doing what we think we should do and that is what we should be proud of. That is what has enabled us to be ahead of some market movements and become a leader in the renewable energy sector, for example. If we keep being followers, we are not going to be ahead of anything. And EDP has been managing, proportionally to its size and far beyond its size, to stay ahead of the market.



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# COMMUNITIES of energy

There has been a growing promotion of the use of renewable energy sources at the European level, emphasizing the importance of models of self-consumption of renewable energy. Within this context, laws and regulations have been adopted across Europe to introduce the concept of collective self-consumption, which differs from individual self-consumption and small production in that it allows one or more points of production and consumption to be combined, provided that they are in the same vicinity.



In the light of this new scheme, EDP created the “Solar Neighborhood” product for Portugal and Spain, setting up energy communities. This product consolidates EDP’s position as a leader in the energy transition and its commitment to achieve 90% of generation using clean energies, as set out in the strategic plan.

A solar neighborhood will enable the use of available roof space of a given building for the installation of solar panels to supply consumption at that site, known as the Producer, but also by other consumers in their vicinity, known as the Neighbors. Solar neighborhoods allow families and companies without space or conditions for the installation of solar panels to use solar energy. In Portugal, the definition of a neighborhood has yet to be implemented by ERSE, which has announced that it will evaluate it on a case-by-case basis in the coming months. In the case of Spain, it was defined as a radius of 500 meters from the Producer building.

EDP undertakes the investment on and maintenance of the solar neighborhoods. The electricity consumed from the solar panels is sold at a discount (compared to regular tariffs) to both Producers and Neighbors. Additionally, EDP undertakes the management of the community, identifying and attracting Neighbors for each Solar Neighborhood.

Any company, condominium, or homeowner can become a Producer, provided they have enough available roof space for a solar installation with greater capacity than their own consumption needs. If it does not meet the conditions required for the installation of the solar equipment, they may become Neighbors.

As well as making energy consumption more sustainable, there are also economic benefits to customers, since even without requiring any investment, they will make savings of around 40% on the energy they consume in the case of Producers, and 20% in the case of Neighbors.

EDP’s ambition is to create around 15,000 Solar Neighborhoods throughout the country, corresponding to 150 megawatts in the next five years. “We already have about 90 megawatts of solar installations at customers in Portugal; and in many cases, if the company were to expand those installations a little, they could supply the surrounding community,” said Vera Pinto Pereira, CEO of EDP Comercial. Moreover, this approach “... offers a very positive response to condominiums that, until now, could only share communal consumption, such as with elevators.”

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# 03

On the ground  
with the community

PASSION LED US HERE

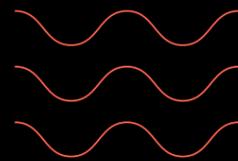
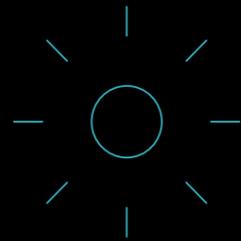
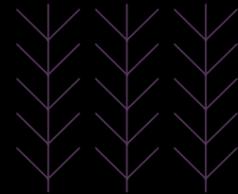
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To deny people their human rights  
is to challenge their very humanity.

Nelson Mandela

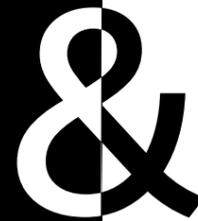


# IN BLACK



The many colors of human rights

By Eduardo Moura



There were maybe 26 of us around a table—or rather, each on our own computer in our own home office space, connected through one of those online apps that lets us meet without having to travel, pack or carry toothpaste in a small, clear bag. One moment we were meeting people from our teams, and the next we were joined by people from Japan, Brazil, France. How long did the journey take? One second. It was breakfast time for some, dinner time for others. For almost everyone, it was an ungodly hour. But no one had to pack. There were two things we all had to do: speak English and strip down the subject of human rights from a company perspective, ultimately coming to a consensus on the key issues, policies and main procedures that electric utilities should implement to ensure respect for and promote human rights.

Perhaps I should start by explaining the reason we decided to meet and talk about this matter. I mean, it wasn't exactly an obligation or requirement imposed by others; it was the desire of those companies to excel in the respect for and promotion of human rights. I know this must sound fake. Often, when I talk about this issue outside of my closest circle, I'm met with a lot of raised eyebrows. There's a certain stereotype that if a multinational corporation is involved, human rights will be trampled on. But that's not really the case.

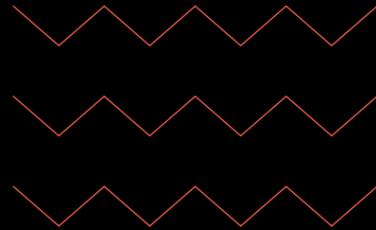
# WHITE



Of course, things don't typically fall from the sky, and the subject of human rights is being increasingly scrutinized by everyone. Especially—and there is certainly some drive here—by investors and shareholders. To a certain extent, an important international consensus has been emerging on the issue. A company that is found to have infringed on fundamental human rights is immediately branded and its reputation is unlikely to recover. But it's not just the fundamental rights established under the Universal Declaration of Human Rights. Contemporary rights gradually emerge as the world becomes more globalized, societies become more democratic and diverse, and problems become more widespread. We could cite the example of the COVID-19 epidemic to show that human rights have taken precedence over the legitimate interests of the markets. But we shouldn't go there; this is such a critical situation that, because of its exceptional nature, may stifle the notion that human rights are in fact at the center of companies' legal and voluntary obligations.

Companies' organizational and work methods have also been changing substantially. Today, companies—especially in democratic societies—are more transparent and participatory. Decision-making bodies delegate and trust teams, and debates on critical issues are participatory, promoting the confluence of different points of view based primarily on objective data and science. Military-style management is rejected in companies because it's a practice that will set the company up to fail sooner or later. Or simply because—as someone said with a smile in that meeting—nobody's got time to put up with authoritarianism no more.





Under this participatory model, companies are made up of the sum of their employees. In multinational companies, the diversity of cultures, traditions, career paths and backgrounds is such that it is almost impossible to manage without listening, sharing, delegating and appealing to everyone's motivation, commitment and dedication. This is the lesson of management. To be successful, and to attract and retain talent, companies must live up to the spirit and conscientiousness of their employees. But they must also steer it toward an ethical, ambitious and discerning shared culture.

I talked about this at the meeting. About how we at EDP are so numerous and diverse, with so many languages, ages, races and styles, from so many countries and different businesses. About how we have so many different local communities living side by side with our production centers; about how our production centers, and our infrastructure, stand on such diverse characteristics; about how our customers are so diverse in terms of age, choices, lifestyles, needs and income; about how our employees experience what the communities feel and think because they are close to them. And about how, more recently, we have started to demand more from our suppliers, to ensure that everyone is on the same wavelength and aligned with how they think about human rights.

I also told them that we have a strong ethical process system; that we pay close attention to everyone's complaints; and that we even forced ourselves to meet key performance indicators (KPIs) in this area. And that we promote volunteering during work hours because it opens our company's eyes to reality and acknowledges the feelings of our people. And that we have lines of action to promote as much access to renewable electricity and thermal comfort as possible. And that we constantly realize we still have so much to do and improve. But I didn't have the time or opportunity to say everything.

The other companies also had stories to tell. And they did. In the end, we agreed that it made perfect sense to further our practice of protecting and promoting human rights: by copying or adopting helpful and inspiring solutions; embracing due diligence methodologies; subscribing to international commitments; increasing the level of detail of the information we provide to our stakeholders; improving our complaint lines; increasing internal debate and reflection; and expanding our policies and adapting them to the full spectrum of situations that our activity exposes us to. And of course, by establishing ambitious goals and targets that are publicly announced and for which we are publicly accountable.

We concluded the meeting and one of the teams was tasked with preparing a document to be published on behalf of everyone—after, of course, encouraging an internal debate in each company and getting input from senior management. We logged off, and some went on to another meeting. Others probably went to sleep. One of these days, we will have to reflect on whether this current deregulation of working hours would warrant a specific measure in the field of human rights.

# “CLOSER2YOU”

a social initiative that makes things happen



Companies occupy a prominent position in the economic and social pyramid of the places where they operate. This is the main reason why EDP Renewables (EDPR) focuses its objectives on sustainability as an agent of change, and continues to be a global leader in the production of renewable energy that generates value and innovation.

Around the world, the clean energy trend is unstoppable. In addition to excelling in its area of operation and standing out for its continuous improvement, EDPR strives to foster development in any region where it operates—encouraging open dialogue, promoting well-being and supporting social activities that positively impact communities. The goal is to identify the needs of each community and help improve their living conditions, while respecting their cultural integrity and taking their interests into account.

Social investment programs are part of the company's strategy, and help meet the collective and environmental development needs of the communities where EDPR operates. The company understands the importance of electricity for sustainable development and is committed to focusing not only on the Sustainable Development Goals (SDGs) that are linked to its core business, but on a business model that positively impacts the other SDGs.

As part of its 2019–2022 Sustainability Report, EDPR pledged to contribute €8 million by 2022 to support local communities in their local development.

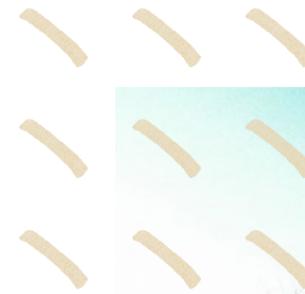
In line with these principles, one of the company’s earliest and most successful programs was born at the end of 2015: Closer2You. This social initiative helps families facing economic hardship by providing and improving public infrastructure in areas where EDPR’s assets are located.



The Closer2You adventure began with renovating a house in Cernavoda, Romania, where an EDPR wind farm is located. After establishing cooperation agreements with local authorities and companies, the standard of living for a family of five with limited resources has improved significantly. Almost five years later, Closer2You continues to work in Romania. This year there was an intervention that consisted of refurbishing a daycare center in Borduşani, a town located near the Făcăeni wind farm. EDPR assisted in renovating the daycare center’s toilets; part of the budget was also earmarked for the purchase of 10 tablets for the children to use in class.

EDPR launched this effort because of the importance of being close to people—their lives, their resources and their environment. It all started in Romania, but Closer2You has already become an international initiative. Countries like Poland, Spain, Portugal and Brazil have all been able to benefit from similar activities, with the program improving the lives of more than a dozen families.

Perhaps we’re not just living through an era of change, but the change of an era. For this to happen, Agenda 2030 and the SDGs must be sources of inspiration behind our activities. Demonstrating its commitment to the future, EDPR is focused on the development of local communities to ensure a successful legacy for future generations.



a conversation about volunteering

**“If we want to be a forward-thinking company, we need the Volunteering Program.”**

EDP Group's Volunteering Program is celebrating its 10<sup>th</sup> anniversary. Two people responsible for the program in Portugal and Brazil exchange ideas—taking stock of the progress made and what still needs to be done.

#### How has the pandemic changed volunteering?

**Carla Barros (CB)** – The pandemic has affected all of the regions where EDP operates. It is a global crisis, but it has had distinct phases. In Portugal, we had to look at our volunteering activities and figure out which of them we could no longer continue—as was the case with all in-person, group activities. Then we looked at the remaining initiatives to see how we could adapt them within the context of the pandemic, opting to carry out many of them virtually.

CARLA  
**BARROS**

Another aspect is our response at the social level, which was very robust. We were all driven by an energy to help those who needed it most. With regard to the volunteering program, we took it one step at a time. We formed a partnership with the covid.pt initiative, through which the community expressed their concerns, challenges and current problems. Then, we started talking to our social partners to see how we could make a difference.

For example, the volunteering program in Portugal made financial contributions to AMI, Comunidade Vida e Paz, and the Portuguese Federation of Food Banks in order to address the social emergency. At the same time, we partnered with AMI and SOSvizinho to put volunteers on the streets, who shopped for supplies and delivered them to those most in need. With the support of EDP's risk team, we ensured their safety at all times.

FERNANDA  
**FERNANDES FERREIRA**

One of the projects that we have to point out within this response was our collaboration with the Ministry of Education. We provided volunteer mentors to help struggling students identified by the Ministry of Education and donated computers. The EDP Foundation in Spain joined us in this effort, which resulted in an Iberian initiative.

**Fernanda Fernandes Ferreira (FFF)** - There are two similarities here with Brazil. The first was analyzing what we needed to shift because of the pandemic. The main concern was ensuring the safety of our employees; here in Brazil, almost everything is done in person. In the beginning, it was scary. That was the first lesson we learned: regardless of the pandemic, we have to move towards an online model and strike a balance between in-person and virtual initiatives. Then, we received lots of donation requests. There were many requests for food and basic hygiene products as well as donations to support organizations' basic expenses, like utility bills.

The most important initiative here in Brazil was creating a social fund for donations. An account was opened under the EDP Institute for employees to request donations. 236 people responded and we raised almost R\$ 500,000. This amount, combined with many other EDP donations, was allocated to six institutions across different states in Brazil. In addition to this initiative, we had groups of employees who got together and implemented their own endeavors—here in Brazil, it's very organic for them to have

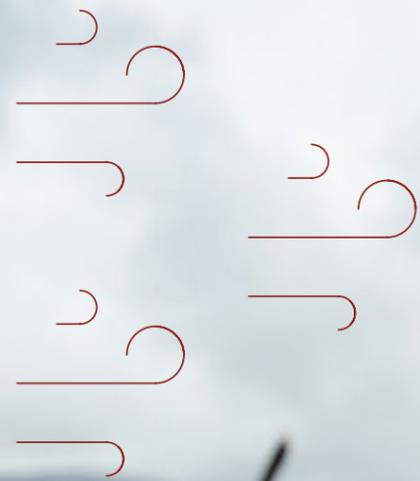
their own causes. We had groups that made masks and hung them from a clothesline by the EDP headquarters so that passersby could take one; another group organized baskets of basic goods to donate; and others held raffles and donated the money raised. There were a lot of small operations, but always in order to help communities close by.

**Do you think that volunteering has become more important for EDP Group, even before the pandemic?**

**CB** – I think so. As the Volunteering Program celebrates its 10<sup>th</sup> anniversary, I feel that it's becoming increasingly present in all of our units and much closer to the business. It's much more in line with EDP's responsibilities on several fronts and has been widely acknowledged. We've been on a path of internal growth that is now part of our DNA, part of the shared EDP culture. Our volunteering is robust and increasingly requested for benchmarking.

**FFF** – Same here. A lot of people are coming to us to learn more about the program, and large companies are seeking us out for benchmarking. "Our energy to care" is very much alive in people's hearts—the idea of volunteering as part of the EDP culture, our sense of caring for the community around us.





**CB** – In Portugal, we have the Family-Responsible Company (EFR) certification. One of the sections asks how we take care of our people, and one of the examples we give is the EDP Volunteering Program. As managers of the Volunteering Program, we have projects that are structured and developed by us; but there are others developed by our employees, who can bring in their own projects. And that is a huge asset. EDP offers every employee four hours of volunteer time off per month in Portugal and Brazil. This is an investment by the company to offer its hours and encourage employees to volunteer.

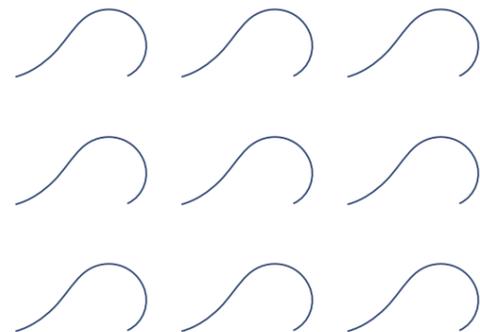
**Is it difficult to mobilize people for this cause?**

**FFF** - Yes and no. We see on Workplace that people are very mobilized for their causes, but they don't share a lot of those efforts with the volunteering department; they don't access our web portal. It's not difficult to mobilize people because they already do volunteer work on their own, independently of the company's program.

**CB** – Our case is different, although I agree that it depends. In Portugal, we have partnerships with many organizations, which allow us to have more structured projects. There are people who want to volunteer, so they go ahead, and bring in other people.



So why does it depend? There are those who recognize the importance of EDP's social work through volunteering, and there are those who don't get it yet. And by that I mean leadership. It's a job that has to be done. For us, the Volunteering Program is not mandatory; only those who want to participate do so. In 2019, 24% of our people volunteered. We exceeded all goals, but it was an atypical year because of the emergency response in



Mozambique. Whenever there is a social emergency, people become more mobilized and other parts of the company come to us asking what needs to be done. Volunteering has this stock of internal goodwill that can make a difference.

**FFF** – When there's an emergency, the same thing happens here in Brazil. Earlier this year, we had an environmental disaster that strongly mobilized people. When something major happens, people want to help. The volunteering drive is there, but we wish it were something more permanent. Last year, about 23% of our employees participated in some kind of volunteering. I agree with Carla regarding leadership; it's something we're still missing. But we are finding that now, with COVID-19, things have improved. Here in Brazil, we also have groups in the inclusion and diversity program—which is another important issue for us—and there we feel the presence of responsible leaders who have been able to mobilize those groups.

**CB** – And a leader can either help or stand in the way. There is the question of to what extent, for some people, is a volunteer project also a business project that must be taken seriously. There's nothing wrong with a person not wanting to get involved in corporate volunteering, but when we make a commitment to volunteer, it must be honored. If the company is increasingly talking about volunteering, then our managers must also understand the company's strategic guidelines.

**What are the advantages of the company having a volunteering program?**

**CB** – In my view, there are several. If I'm committed to the community, the fact that the company allows me to do that through the Volunteering Program will make me more strongly committed to the company. There's an immediate connection there, an emotional gain at a fundamental level. Then there's the strategic level. We the company are tackling social issues through our Volunteering Program as well as through our business and skills. The company benefits from this at the reputational level: it is seen as a socially responsible company, connected to its people and customers. People are increasingly driven to make choices based on a sense belonging to a company and its level of social responsibility.

**FFF** – This is not only a governmental responsibility. Companies have a strong potential responsibility to society and they can make a difference. Now, with COVID-19, we've seen a number of companies mobilizing independent from governments. Companies that have social programs are more spiritual and more committed to others, thereby creating a network of goodwill. People who volunteer are driven by a life purpose: they stop caring only about themselves and start caring about others.



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When the company provides that space, it brings something back to the company because that person is more engaged and able to share that with his or her coworkers. The love that's involved in giving back is reflected in the company's climate surveys, increased engagement and in the eye of investors who look at the company in a different light. It's not just a result, but a result with purpose.

**CB** – The word “purpose” makes perfect sense. We are living through an interesting time. Companies will only succeed if they retain that purpose because our choices are going to be different. I think that EDP has

been following this path; it just needs to do it more consistently.

**Is volunteering important for a company's sustainability?**

**CB** - Yes, no doubt about it. If we consider the pillars of sustainability—economic, environmental and social—volunteering is always there: on the economic side, because embracing this purpose and engagement can bring more customers and goodwill to the community; on the environmental side, because some of the volunteer work we do is in line with sustainability; on the social side, because it's part of the social transformation we want to enact.

If we want to be a forward-thinking company, we need the Volunteering Program; our employees need to have a purpose as part of the company's own strategy.

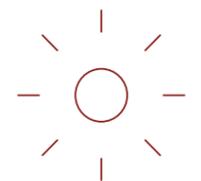
**FFF** – Absolutely!

**What is your advice to someone who has never volunteered before?**

**CB** – The thing that comes to mind is our motto: “Dare.” Dare to take that step; dare to be part of something bigger. The Volunteering Program has a wide range of projects: environmental, social, skills-based and rehabilitation. There's tons of different options—so, dare!

**FFF** – That's exactly right. Our program's motto says it all. Allow yourself to experience what it's like to be a volunteer. We think that we're helping others, but the truth is that we're helping ourselves. That's very impactful. It's empathy, compassion and sharing. We receive a lot in return.

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**I dare  
to share  
my energy**

# EDP SUPPORTS PROJECTS

providing access to sustainable energy in Africa

Approximately 789 million people are still without access to electricity and around 2.8 billion depend on wood, charcoal, agricultural waste and coal for cooking and heating<sup>1</sup>. This problem is particularly prevalent in Sub-Saharan Africa, where only 47% of the population has access to electricity<sup>2</sup>. Access to clean, affordable and reliable energy is vital to boosting employment and sustainable growth.

EDP promotes access to sustainable energy for all, focusing on countries with low electrification rates and concentrating its efforts on two main areas:

- Investment in the capital of companies that develop Access to Energy (A2E) businesses
- Donations to social organizations that support sustainable and clean energy projects in the areas of education, health, water and agriculture, business, and community development

As part of its strategy to support the electrification of populations without access to energy, EDP has invested in the capital of Rensource, in Nigeria, and SolarWorks!, in Mozambique, and has supported 13 clean energy community projects in **Mozambique, Kenya, Tanzania, Malawi, and Nigeria.**

## EDP Group Investments



Energy access projects and companies



Investment in business capital

**2018**  
**SolarWorks!**  
Autonomous systems for solar energy (SHS)  
**2,000,000€**

**2019**  
**Rensource**  
Decentralized systems growth and management for solar energy  
**2,700,000€**

**2018-2020**  
13 of 108 projects were selected from the first round of the fund  
160 projects from the second round of the fund

<sup>1</sup> IEA, IRENA, UNSD, WB, WHO (2019), Tracking SDG 7: The Energy Progress Report 2019, Washington DC

<sup>2</sup> Access to electricity (% of population) - Sub-Saharan Africa (excluding high income), World Bank, Sustainable Energy for All database

## Donations made to organizations (Energy Access Fund)



**1,148,000 people**

65,000 direct beneficiaries  
1,083,000 indirect beneficiaries



### Co-operative Bank Foundation

12 solar stoves  
Irrigation systems in seven schools  
Guaranteeing the production of food needed by students  
Surplus sold in local markets  
Potential energy of up to 100 kWp

**Energy access for 6,000 people**



### UN-Habitat

Promotion of access to education for displaced persons  
Installation of emergency warning systems  
Internet access and cellphone top-ups  
Installation of a 3,8 kWp solar energy system  
12 classrooms in two schools

**1,200 direct beneficiaries**



### Salesians of Don Bosco

Creation of a solar/renewable energy office  
Improvement in young technicians' training and education in solar energy  
Substantial financial savings with diesel generators that can be used for various operations at the Center  
Installed capacity of 10 kWp

**2,700 direct and 7,000 indirect beneficiaries**



### Aga Khan Health Services

Generation and supply of sustainable and clean electricity, maintained to a high standard for patient care  
Reduction in energy costs (electricity and diesel)  
Installed capacity of 40 kWp

**1 million beneficiaries a year**



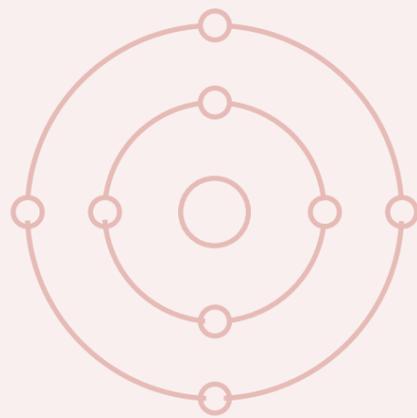
### aQysta BV

Installation of 50 Barsha pumps and 50 irrigation kits  
Installed renewable capacity of 3600 kWh per month  
Each Barsha pump prevents the emission of 0,8 t CO<sub>2</sub> per year  
Up to 150% return for farmers  
15 jobs created

**250 direct and 2,000 indirect beneficiaries**

# 04

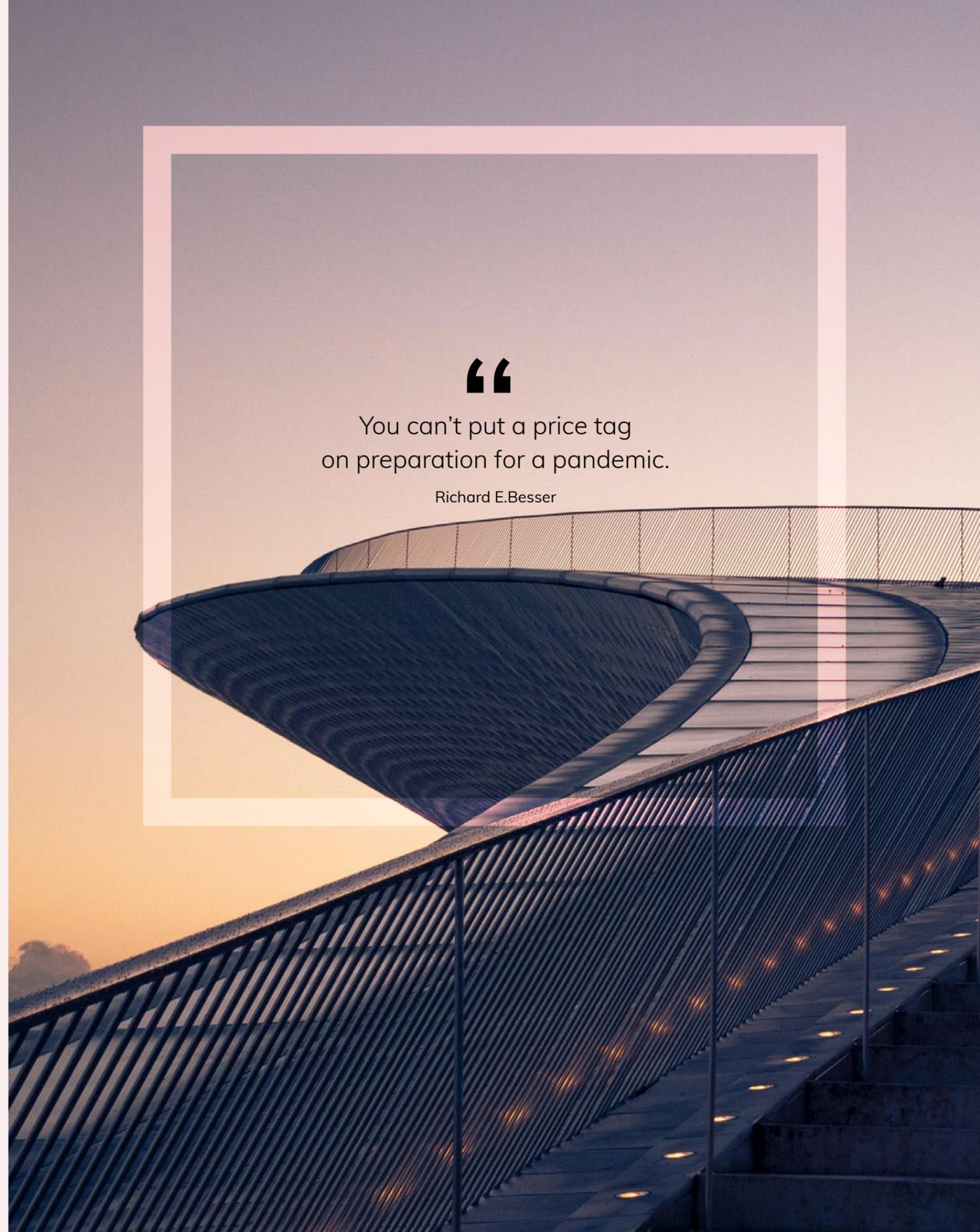
The alarm bell  
for humanity  
Covid-19



“

You can't put a price tag  
on preparation for a pandemic.

Richard E.Besser



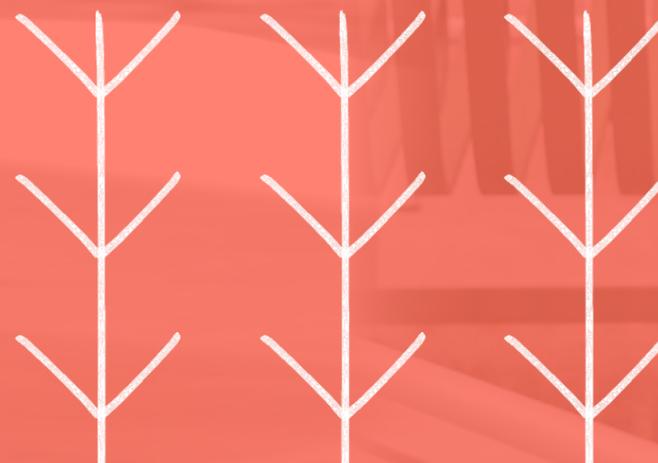


# António Castro

Managing Director of Sustainability and Risk

“To get to the new normal,  
we first have to weather  
the abnormal.”

A dose of prudence, with a touch of optimism.  
No one knows the real impact that COVID-19 will have on  
our lives just yet, but António Castro believes  
that there is still time to learn from our mistakes  
and turn the situation around.

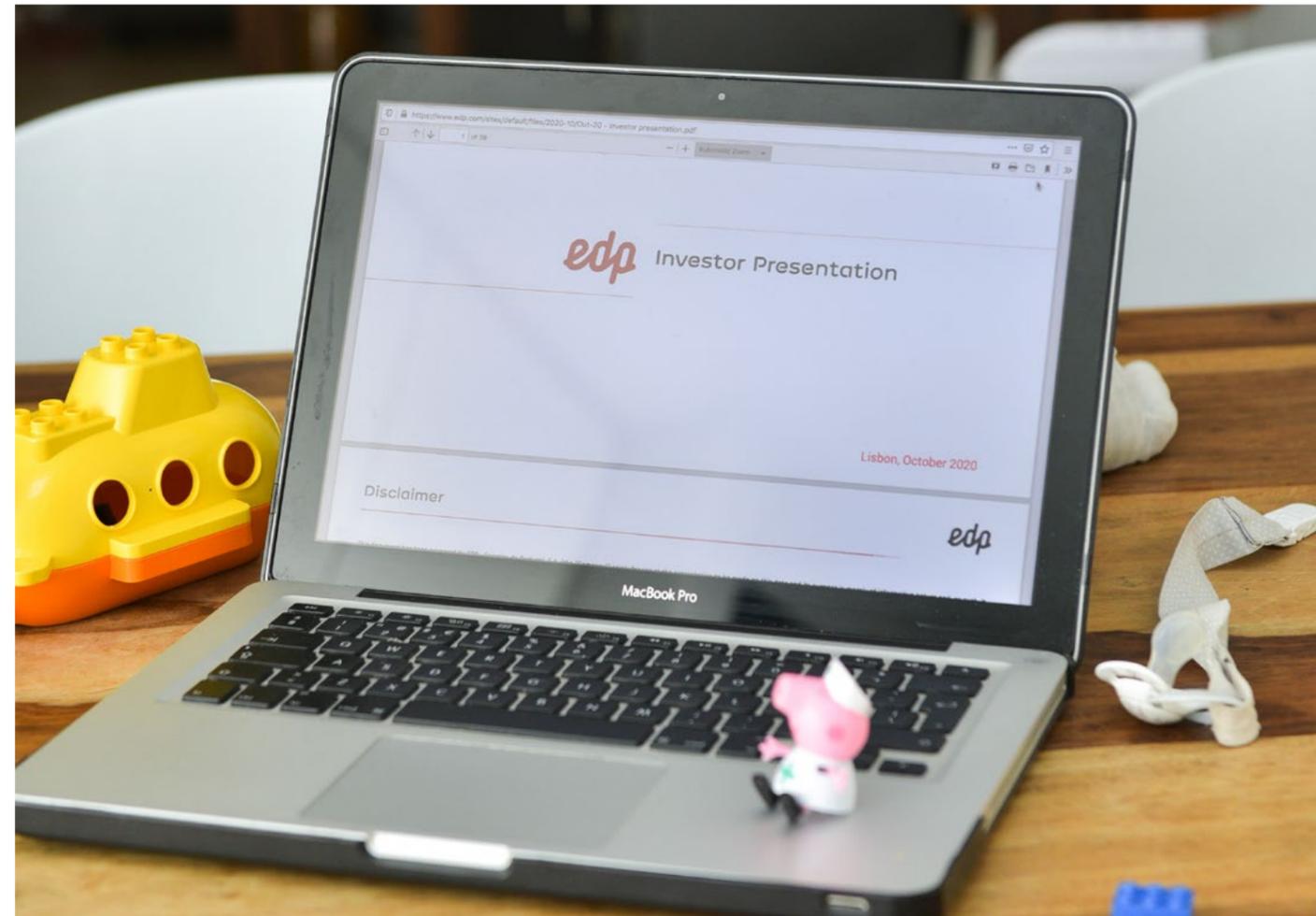


The phrase “new normal” has entered the global lexicon. However, the concept is actually nothing new; its origins predate COVID-19. In 2009, the “new normal” was already being discussed by financial market specialists in regards to how the United States would adapt in the aftermath of the 2008 crisis.

But it never attained such indisputable universal importance until now. The definition of a “new normal” is related to a drastic change in society— a substantial transformation in the way we do things, and a farewell to a modus operandi that is definitively left behind. The novel coronavirus has fundamentally changed our lifestyle on a global level. The question on everyone’s mind is: how will we live from now on? Will we learn from our past mistakes and do better when this is all over?

“We hope so,” said António Castro, managing director of sustainability and risk. “I think that we always learn from our mistakes. Now, whether this will be enough to counter the overconsumption of the planet’s resources and force us to become more prudent, I don’t know.”

In this regard, there is still no universal truth. Especially as the pandemic continues to escalate. But it seems like some new aspects that are here to stay, such as the issue of remote work. In the past, many companies were hesitant to adopt a remote work model, but organizations around the globe quickly adapted to new circumstances. And with great success. “We realized that most of our face-to-face meetings—which



often involved long-distance travel—can now be done using new tools,” Castro said. “In the past, conferences always meant being in a room full of people. Now, even some of the most important ones in the world are held by videoconference. Less than a year ago, we wouldn’t have thought this was possible.”

#### **Impact on the planet and the economy**

If remote work and virtual conferences are here to stay—with increased convenience for people and reduced costs for companies—

there are also some possible conclusions to be drawn about the planet’s health; we have reduced our travel and consumption. The CO<sub>2</sub> emissions threatening the atmosphere are clearly lower, and the air in major cities is noticeably cleaner. But these gains may be short lived. Unfortunately, climate change appears to continue unabated.

In financial terms, although governments have responded to the crisis in the wake of this pandemic, the final costs are still waiting to be tallied. What everyone seems to agree on is that the tab won’t be cheap. Especially for developing countries: “Globalization has helped developing countries improve their living conditions, but this slowdown can have tragic consequences. Globalization has taken a step back. On the one hand, this makes sense, since it’s unreasonable to move goods around for thousands and thousands of miles in order to save a few cents; but on the other hand, we need to find mechanisms to help developing countries.”

“I think that we always learn from our mistakes. Now, whether this will be enough to counter the overconsumption of the planet’s resources and force us to become more prudent, I don’t know.”

This pandemic will stir up quite a few changes in some business models. One of the most prominent aspects is online shopping, which has grown exponentially. Many people have grown used to buying online and will continue to do so even after the pandemic.

The exception will be the tourism sector. “I think it will go back to what it was,” Castro said. “Once people are no longer afraid, there is no reason for them to stop traveling.”

#### EDP Group's responses

As prepared as companies were to respond to disasters, the pandemic turned out to be an extreme situation for which there was no concrete plan in place. With no time to waste, EDP Group companies were quick to decide and implement measures on the ground. Without compromising the safety of its people, EDP has kept strategic sectors—which ensure the continuity of energy supply to every household in the country—from being jeopardized.



All business continuity plans, previously approved by the Executive Board of Directors, were promptly activated. But the real preparedness drill ended up being the pandemic itself. “EDP provides the essential public service of delivering energy to people. We have so-called critical assets, where come rain or shine, COVID-19 or not, we must have people there,” Castro said. “We had already established crisis management plans at the time of bird flu, although not for an event of this magnitude. But they helped us to act more effectively. That’s why we were quick to send everyone home, for example, because the plans were already in place.”

“All business continuity plans, previously approved by the Executive Board of Directors, were promptly activated. But the real preparedness drill ended up being the pandemic itself.”

There was also a lot of work already done to prepare the information systems and strengthen the infrastructure capacity. Still, from one day to the next, more than 75% of our employees began working from home. Thousands of people needed to access corporate systems, enter file archives, conduct business operations and hold video calls several times a day. Before March 13, there were an average of 300 daily remote requests to connect to the corporate network; by the following week, that number had increased to more than 3,000! Despite the increased volume, people still needed to continue their daily activities with the same speed and urgency. The team’s rapid response during this time showed their hard work, resilience and preparedness.

Another area that was quick to adapt was customer service. At the start of the pandemic, EDP Comercial had to physically adapt its response to customers by reducing, or even suspending, most face-to-face activities (stores, technical services and door-to-door activity). As the situation rapidly escalated, with the declaration of a state of emergency on March 18, we moved toward closing 100% of stores, suspending door-to-door activity and transitioning all contact center assistants to remote work.

Despite these changes, customers continued to get support through the (now remotely operated) phone and digital channels. And even during this period, technicians continued to provide urgent on-site assistance, with increased safety measures. “We never imagined that these changes could have been implemented so quickly. And the truth is it all worked out,” Castro said.

Another aspect that “worked very well” was the medical services. From the information provided by health professionals to the Sãvida COVID-19 hotline, from the vaccination campaign to remote medical consultations, the Sãvida team carried out a number of initiatives that continue to benefit EDP Group employees and their families. “I was very pleasantly surprised by the responsiveness demonstrated by Sãvida. I think it brought great peace of mind to the company. The worst that could happen would have been establishing a climate of uncertainty.”

EDP Global Solutions has also strived to offer the best, most immediate response to ensure that everything ran as smoothly as possible for the various EDP Group companies, including building management; the purchase and distribution of protective equipment (at a time when there were shortages in the market); the coordination of returning to the workplace; and the provision of psychosocial support to employees.

**Positive evaluation of the company**

With proven effectiveness on all fronts, António Castro believes that EDP's responses have strengthened the Group's values as a humane and sustainable company. One month after the mandatory lockdown, EDP Group launched a global survey to assess how employees have adapted to this new way of working. The survey had a participation rate of 72%—65% in Portugal, 75% at EDP Brasil, 86% at EDP Renewables, and 75% at EDP España—and the results were quite positive: more than 80% of employees are looking forward to working remotely once or twice a week during the new normal. This new way of working may well support EDP Group's sustainability agenda and contribute to a healthier and more productive company.

"Because the return to the facilities is voluntary, people don't feel forced to come back," he added.

Despite the climate of uncertainty, people felt that EDP's activity was not affected. "Consumption has dropped, and so have the pool prices, and that will be reflected in our accounts. But I would say that we haven't suffered as much as other companies," Castro said.

Our difficulties are certainly far from over. EDP Group's managing director for sustainability and risk made a point to leave one last remark: "To get to the new normal, we first have to weather the abnormal."



## “The next ten years are going to be fabulous.”

She has been with EDP Group for seven years and is still passionate about what she does. In this interview, she talks about new ways of working and how the company passed the pandemic test with flying colors, causing employees to love EDP even more.

And she's optimistic about the future. “Anyone who aspires to do interesting things during his or her career will find fantastic opportunities here.”

# Paula Carneiro

Head of People Experience  
Unit at EDP Group



Twitter CEO Jack Dorsey told his employees that, even when the pandemic is over, remote work is here to stay. On the contrary, Netflix founder and CEO Reed Hastings said that there's nothing positive about remote work, and that his workforce will return to the office as soon as possible. **Where does EDP stand?**

In the middle [laughs]. Our position isn't as extreme as either of those takes. As the saying goes, “virtue lies in the middle ground.” We discussed our future ambitions at length and in great detail, and ultimately decided to tread the middle path. We want to provide flexible solutions for our employees. And that means balancing on-site time with remote work. Our goal is to have three days of on-site work and two days of remote work for all positions where that is feasible. Given our space constraints, the pilot test may not allow for this exact plan. But the future is now, and we hope to start balancing these two approaches with what we call a “hybrid model.”

**Even prior to this new normal, the available technologies meant that we were already much more connected. Is there a danger of not knowing when to disconnect, which increasingly blends personal and professional life? What has the company been doing to address this?**

There is a difference between working remotely and always being logged on. Technology allows us to be permanently connected. Now, whether or not we make use of that opportunity is a different matter. I think we've been communicating a lot, even with managers, to stress that people do have a work schedule even when they're working remotely. We have to respect people's work-life balance and free time. Just because they're working remotely doesn't mean that they have to work past their regular hours.

**What do you make of the latest employee survey results?**

According to the results, people don't feel that their work-life balance has gotten any worse, all things considered; in fact, it's quite the contrary. I think we've been able to manage this issue well. We implemented a number of new initiatives during the pandemic, namely providing psychological support. We plan to offer even more mental health and well-being resources because we're increasingly convinced that these are key elements of what we offer to all people. This is an issue that concerns us. We are certified as a family-responsible company. We have increasingly sought to find solutions that meet the expectations of those who work with us. In terms of engagement and enablement, our data shows that things have improved a lot; surprisingly, the figures have been even better.

**Did you feel like the lockdown was a smooth transition for most employees?**

The first weeks were a challenge for everyone: adapting to being at home all the time; sharing a house with lots of people and family; dealing with housework and schoolwork routines, etc. I think that people eventually found their space, their rhythm, and by the time we first checked in in April, it seemed like they were already well-adjusted. It was a period of transition. And I think EDP did great. We knew how to take this challenge and turn it into an opportunity, proving that we were capable of bringing it to a successful end.

**Can we extrapolate whether people from different generations had more or less trouble adapting?**

I think we had a bit of everything. I wouldn't want to get too into the stereotypes about older or younger people. There are challenges related to isolation or work overload regardless of age. It's probably easier and more comfortable for the younger generations to go digital. But on the other hand, they may be less knowledgeable about the company or less integrated, and therefore have more difficulty finding their way in a remote world, in terms of getting to the right people in order to get the job done. More senior employees have no trouble at all with that—they just pick up the phone or log in to Teams, because they know the business inside and out. I think that different age groups had different challenges, but we all faced some difficulties.



**In terms of the traditional workspace, was this pandemic the final nail in the coffin of open-plan offices? What is going to change in the near future?**

Offices will have to be rethought from the perspective of spaces that are much more focused on collaboration, projects, sharing ideas and learning. I think individual work might be more productive when done remotely because people are more focused at home. But the office has to be reworked based on a much more collaborative model, leaving individual work to be done remotely. We were already planning on rethinking our spaces, but in light of this new paradigm, we may have to push them a little further. Like everything in life, we continue to evolve as needs arise; and in EDP's case, we even anticipate trends or needs that we think will only arise in the future.

**How do you deal with the spirit of group unity around the EDP brand and values when we are physically separated?**

The team jersey can be worn at any time. There may be even more people wearing the EDP T-shirt at home than at the office [laughs]. If we look at the surveys we carried out, the pride in being part of EDP—which was already very high—has increased to nearly 100% because people feel that we've managed the pandemic very well.

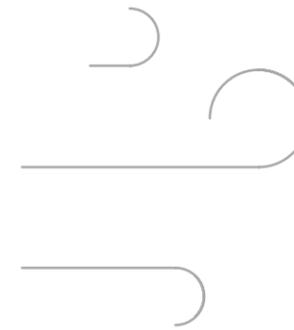


“If we look at the surveys we carried out, the pride in being part of EDP—which was already very high—has increased to nearly 100%.”

When we asked those questions—in April, June and July—the responses we got about how people wore and continue to wear the team jersey were always very positive. During the pandemic, everyone still felt like they were a part of EDP despite being physically distanced from the office. The psychological-emotional link between the people, brand and company became even stronger.

#### How will this pandemic impact future jobs?

There are new skills that must be embraced, but they are more closely tied to the transformation that EDP will continue to undergo in the coming years. In this regard, we have been working on



several fronts. I think that, similar to the importance that the digital roadmap had in the last strategic update, there are other roadmaps that will become important. Both in terms of business skills—such as the hydrogen business, if we move ahead with that project—and in terms of behavior. We need, deep down, for everyone to be leaders in this transformation, both in ways of working and in business skills. There are great things happening for the new generation to grab hold of.

#### Regarding the different regions where EDP group operates, how does hr deal with the varying sociopolitical realities?

I think that we've been guided by EDP decisions more than by the decisions of each country. In countries where the measures were not as protective of human life, we ended up adopting intra-group decisions essentially aimed at protecting the lives of EDP employees and their families. There was unity in terms of pandemic management and all EDP regions were involved throughout the process. Within the EDP ecosystem, we discussed and helped each other greatly.

#### What do you think EDP will be like in 10 years?

I think that EDP has everything it takes to become a global player; it's on track to be a fantastic company to work for. I've worked at several places, but never in the same position at the same company for this long. I often wonder how, after seven years at this company, I still fall in love with what I do every day. I'm very excited about what we have in store. In 10 years, EDP will inevitably be a different company: more fluid; more international' increasingly driven by projects and skills mobilities; and much more focused on areas like added-value services. For those at EDP, the coming years will be marked by a huge desire to grow and change the world. And I also want to be part of that. I think that anyone who aspires to do interesting things during his or her career will find fantastic opportunities here. That's why I believe that the next 10 years are going to be fabulous, and I for one am in no rush to retire [laughs].

# 05

Embrace the chaos  
of Nature



“

We need the tonic of wildness.

Henry David Thoreau

## DEVELOPMENT VS. BIODIVERSITY: a battle or a union?

By Rafael Ribeiro Borgheresi

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The Amazon is remarkable. According to data from the National Institute for Amazonian Research (INPA)<sup>1</sup>, the Amazon biome occupies an area of approximately 6.7 million km<sup>2</sup>, of which more than half (4.1 million km<sup>2</sup>) is in Brazil. Due mainly to agricultural expansion and timber extraction, since 1988 the Amazon has lost around 11% of its original vegetation cover. However, it still remains the largest uninterrupted forest in the world. The Amazon River releases an average of 210,000 cubic meters of water into the Atlantic Ocean every second,<sup>2</sup> whereas the world's second largest river basin—the Congo Basin in Africa—pours 46 thousand m<sup>3</sup>/s into the ocean.

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The biome contains an overwhelming abundance of flora, fauna and fungi, and boasts the status of being the planet's most biodiverse region. There are more than 2,000 species of fish in the Amazon<sup>3</sup>, which represent almost a quarter of global freshwater fish species. Amazonian flora includes around 16,000 species of trees, according to a study published in Science magazine ("Hyperdominance in the Amazonian Tree Flora"<sup>4</sup>). In comparison, the number of tree species in North America only numbers 650.

The Amazon region has been the focus of discussion in recent decades. In view of its ecological importance and its role in environmental equilibrium, the settlement and exploitation of this region is cause for global concern.

Due to the abundance of water resources, the Amazon region has a high potential for hydroelectric generation. According to the Ten-Year Energy Expansion Plan (PDE) 2030 tabled by the Energy Research Office (EPE)<sup>5</sup>, 42.2% of the country's hydroelectric potential is concentrated in the Amazon Basin. The plan also highlights that unleashing this potential in the Amazon is vital for the expansion of long-term electricity supply in Brazil.

Hydroelectric power plants are considered a clean and renewable source of energy, although this doesn't mean that the social and environmental impacts of their installation are negligible. The Environmental Impact Studies of these undertakings— within the scope of environmental licensing in Brazil—are extremely complex. One of the most relevant factors is the project's impact



# bio diver sity

on local biodiversity, as habitats are transformed when areas are flooded to form reservoirs. Hydroelectric exploitation in the Amazon is sometimes questioned due to its generally flatter layout, which causes the flooding of large areas for power generation.

Even with the high demand for Brazilian environmental licensing, it is still possible to reap rewards by unearthing new local biodiversity knowledge by monitoring flora and fauna. This knowledge also aids

preservation. Consider the UHE Cachoeira Caldeirão project, under concession by EDP Energias do Brasil and located between the municipalities of Porto Grande and Ferreira Gomes in the state of Amapá, northern Brazil. In this project's fauna studies, several species in danger of extinction were registered, monitored and studied, such as the red-faced spider monkey (*Ateles paniscus*), the cougar (*Puma concolor*), the South American tapir (*Tapirus terrestris*) and the white-lipped peccary (*Tayassu pecari*)<sup>6</sup>.



Burning of fossil fuels is, by far, the largest source of electricity generation in the world<sup>7</sup> and, as a result, has many negative environmental externalities and impacts. In addition to the emission of pollutants affecting health, burning fossil fuels emit a large quantity of greenhouse gases that cause climate change, thereby directly influencing the reduction of biodiversity. Therefore, as greater than 60% of its electrical grid already comes from renewable sources, Brazil is well placed to be part of the solution to the greatest environmental challenge today: climate change.

It is agreed that Brazil is a world-leading example in the generation of renewable energy, although this is changing. Between the years 2014 and 2015, the country experienced a severe water crisis that led to the implementation of several thermoelectric plants powered by fossil fuels. Advancing discussions about alternative sources of wind and photovoltaic solar energy and their implementation is very important. However, according to the EPE Ten-Year Energy Expansion Plan (PDE) 2030<sup>8</sup>, these are intermittent sources, and therefore the existing uncertainties around the guarantee of future power mean expansion planning studies must remain conservative. This is not the case with hydroelectric plants, which have greater durability.



Society faces an age-old dilemma: whether to guarantee environmental preservation or promote economic development and prosperity. But we must understand that these are not mutually exclusive activities. This cultural change must take into account an understanding of each region's economic strengths and an awareness of how to best exploit them.

Of the total deforestation that occurred in Brazil between 2000 and 2012, 90% was illegal, according to a study published by the NGO Forest Trends<sup>9</sup>. This data is important because it demonstrates that this issue is not just a failure in public preservation policies, and reveals that there is also an inefficiency in how these laws are applied. The question that arises is not that of softening punitive legislation, but instead moving away from sole dependence on it towards a cultural paradigm shift that focuses on the sustainable use of natural resources.

Addressing this issue is not a trivial matter. While there is widespread interest in the global benefits of protecting the region, there are inhabitants of the Amazon with their own ambitions and interests, who could eventually contribute to perpetuating unsustainable exploitation of the region for their own short-term gain.

Therefore, companies operating in the Amazon must be aware of the importance of local biodiversity and also their role in tackling socioenvironmental issues, promoting local economic activities and profitable business models that also value biodiversity and the forest.

There are also existing market mechanisms that, if staggered, can monetize diffuse interests in the Amazon for its protection. This is already the case with the well-structured carbon market, and other mechanisms for payments for environmental services.

The dilemma of preservation versus economic development is an old one. Even in 1876 in Brazil, the abolitionist leader André Rebouças was already defending the creation of forestry reserves. He stated: "The current generation cannot offer a better gift to future generations than keeping the beautiful islands of Araguaia and Paraná intact, free from iron and fire." We have to face our responsibility in terms of what we will leave to the next generations, and those who work in the Amazon must take the lead in the discussion and be part of the solution.

Deforestation of the Amazon puts the global environmental balance at risk, causing real damage to society. By understanding local economic strengths and taking advantage of biodiversity resource potentials and market mechanisms, we can unite resource exploitation with preservation of the Amazon.



<sup>1</sup> Peixoto, A.L. (et. al). Knowing biodiversity Brasília: MCTIC, CNPq, PPBio, 2016. Available at: [https://ppbio.inpa.gov.br/sites/default/files/conhecendo\\_a\\_biodiversidade\\_livro.pdf](https://ppbio.inpa.gov.br/sites/default/files/conhecendo_a_biodiversidade_livro.pdf).  
<sup>2</sup> ANA - National Water Agency. Available at: <https://www.ana.gov.br/panorama-das-aguas/divisoas-hidrograficas/rios-do-brasil/rio-amazonas>.  
<sup>3</sup> Amazon Fish Project. Available at: <https://www.amazon-fish.com/datavisualization/sampling-efforts-over-years>.  
<sup>4</sup> Hyperdominance in the Amazonian tree flora. Science 342, 1243092 (2013) Available at: <https://science.sciencemag.org/content/342/6156/1243092>.  
<sup>5</sup> EPE. Energy Research Office. Ten-Year Energy Expansion Plan (PDE) 2030 Brasília: EPE, 2016. Available at <https://goo.gl/Kk5J22>.  
<sup>6</sup> UHE Cachoeira Cadeirão, 2016 5<sup>th</sup>. Quarterly Report, Biolex Consultoria Ambiental LTDA. Supervision of the Program for Monitoring Endangered and Migratory Species in the Operation Phase. Operation License - LO nº. 0237/2015 - IMAP Process no. 32,000-1046 / 2008.  
<sup>7</sup> World total energy supply by source, 1971-2018. Available at: <https://www.iea.org/data-and-statistics/charts/world-total-energy-supply-by-source-1971-2018>.  
<sup>8</sup> EPE. Energy Research Office. Ten-Year Energy Expansion Plan (PDE) 2030 Brasília: EPE, 2016. Available at <https://goo.gl/Kk5J22>.  
<sup>9</sup> Forest Trends 2014. Consumer Goods and Deforestation: An Analysis of the Extent and Nature of Illegality in the Conversion of Forests to Agriculture and Plantations for Timber Purposes. Available at: <https://www.forest-trends.org/wp-content/uploads/imported/for171-consumer-goods-and-deforestation-letter-exec-summary-portuguese-15-0121-pdf.pdf>

# THE PERFECT CYCLE

## of the circular economy

**María Yolanda Fernández Montes**  
 Environment, Sustainability, Innovation and Climate  
 Change Management, EDP España

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In recent years, companies have followed a path replete with colors and shapes until reaching the perfect circle: the circular economy. In 2012, we started using the term “green economy”, driven by the Earth Conference held in Rio de Janeiro, to end a polluting consumption model that used up non-renewable resources (“the brown economy”). However, the green economy has, on many occasions, proved elitist and unsustainable in transferring the extra costs of green products to the consumer without considering the impact of its own life cycle. This led to the emergence of other terms such as that of the “blue economy”, centered on the use of local raw materials and on valuing resources that didn’t require them.

It was within this setting that the European Union swapped colors for shapes, promoting the “circular economy” strategy in 2015. Focused on doing more with less, this model would ultimately end the existing “linear economy” of extraction, use and disposal. Within this European framework, EDP España opted for the transition to clean and cyclical energy by defining its own circular economic strategy. This continues to bring economic, environmental and social advantages:

- Improvement of operational **efficiency**, since the risks derived from the scarcity of resources (namely volatility in the cost of raw materials) have decreased while operating costs have also reduced, boosting competitiveness and strengthening relations with customers and stakeholders.
- Helping to face the **climate crisis** with a global view: EDP's efforts to mitigate global warming have been centered on the decarbonization of electricity generation. However, the transition to renewable energies represents only



55% of global CO<sub>2</sub> emissions. The rest is due to the way goods and services are manufactured and consumed, which is something that the circular economy will allow to change. In our specific case, increasing asset utilization rates and recycling materials used in manufacturing will reduce the demand for elements such as steel, aluminum and other materials and, consequently, the CO<sub>2</sub> emissions associated with production.

- Supporting the achievement of the **Sustainable Development Goals (SDGs)** of the United Nations’ 2030 Agenda. EDP España’s move to a circular energy model will help to achieve the most relevant SDGs: responsible production and consumption, clean energy, more innovative industry, sustainable cities and strengthening of natural capital, while also promoting agreements between public and private entities.

EDP España's strategy is based on the following principles: accepting our **responsibility** as an integral part of a system in which we generate positive and negative impacts; optimizing the **performance of all resources** used in our activity; conserving and strengthening **natural capital**, understood as the natural resources that surround us (plants, minerals, animals, water, air, etc.) and the goods and services they provide; and boosting the **value chain** to work together to achieve more efficient systems. All of this drives **innovation**, generating **stable alliances** and communicating **transparently** with all **stakeholders**.

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06

Anticipating innovation



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The only way to discover the limits  
of the possible is to go beyond them  
into the impossible.

Arthur C. Clarke

Ilha Terceira, nos Açores, vai receber projeto IANOS



# NEW

by EDP & CTG



**New projects  
to design  
the future of energy**

Every day at NEW—the research center located at EDP Labelec in Sacavém—around 25 people are hard at work to reinvent the future of energy, with their sights set on decarbonization. In just six years, EDP Group’s growing research and development center has already launched 30 projects, with a total budget of €330 million.

On the verge of celebrating six years in operation, EDP’s NEW research and development (R&D) center is introducing several innovations for the last quarter of 2020— starting with five new projects that are set to kick off soon. These new R&D projects touch on EDP Group’s priority areas, covering a number of issues relevant to the energy transition. The main highlight is the IANOS project, coordinated by NEW itself, which aims to contribute to the decarbonization of islands by developing and demonstrating new energy community concepts, in order to maximize the integration of renewable energy and increase energy efficiency in this context. One of the sites for this demonstration will be Terceira Island, in the Azores. Other pilot tests will take place on the islands of Ameland (Netherlands), Lampedusa (Italy), Nisyros (Greece) and Bora Bora (France).



Portuguese Navy Alfeite Naval Base

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The SATO project will focus on increasing the intelligence, efficiency and flexibility of buildings. The primary objective is the creation of an IoT platform that connects to the building's equipment (appliances, air conditioning, electric vehicles, etc.) and consolidates all the data, enabling that building to assess and optimize its own energy management in an entirely autonomous way. There will be eight pilot tests in five European countries, covering a wide variety of building types. In Portugal, the tests will take place in Seixal and Lisbon at residential, service and commercial buildings.

Project eNeuron aims to develop new tools for the creation and operation of local energy communities that integrate different distributed energy resources. The core concept is the "Energy Hub" for the control and management of different resources. The project will be demonstrated in four countries: Portugal, Poland, Norway and Italy. The Portuguese demo site is the Alfeite Naval Base in Lisbon.

Project 5GaaS will contribute to the expansion of 5G by developing and deploying a new platform to connect infrastructure owners and entities that need access to those infrastructures, creating a decentralized marketplace for the telecommunications ecosystem. NEW is acting in support of EDP Distribuição, which will participate in the project as a neutral host, granting access to part of its extensive distribution asset network.

The ARIA2 project aims to develop a set of services based on Earth observation data from European Space Agency satellites, as well as advanced meteorological data focused on the offshore wind industry in the Atlantic region. These services will be used to support the decision-making process of offshore wind farm investors and operators, in both the development phase and the planning phase of offshore operations. WindFloat Atlantic will be the project's main case study.

These five projects bring NEW's current portfolio to 23 projects, plus five that have already been completed. More news is expected in early 2021 with the start of the LOLABAT project, which will test a new nickel-zinc (NiZn) battery, and the Current Direct project, which will demonstrate the application of batteries in ships.

NEW, which has recently launched a lighter and more colorful image reflecting the center's vitality and growth, is also promoting a new initiative: R&D Sessions. These are webinars presented every two weeks by the NEW team, with the participation of several guests. They aim to showcase various ongoing projects, and to provide a space for discussion of the most pressing issues in the energy transition.





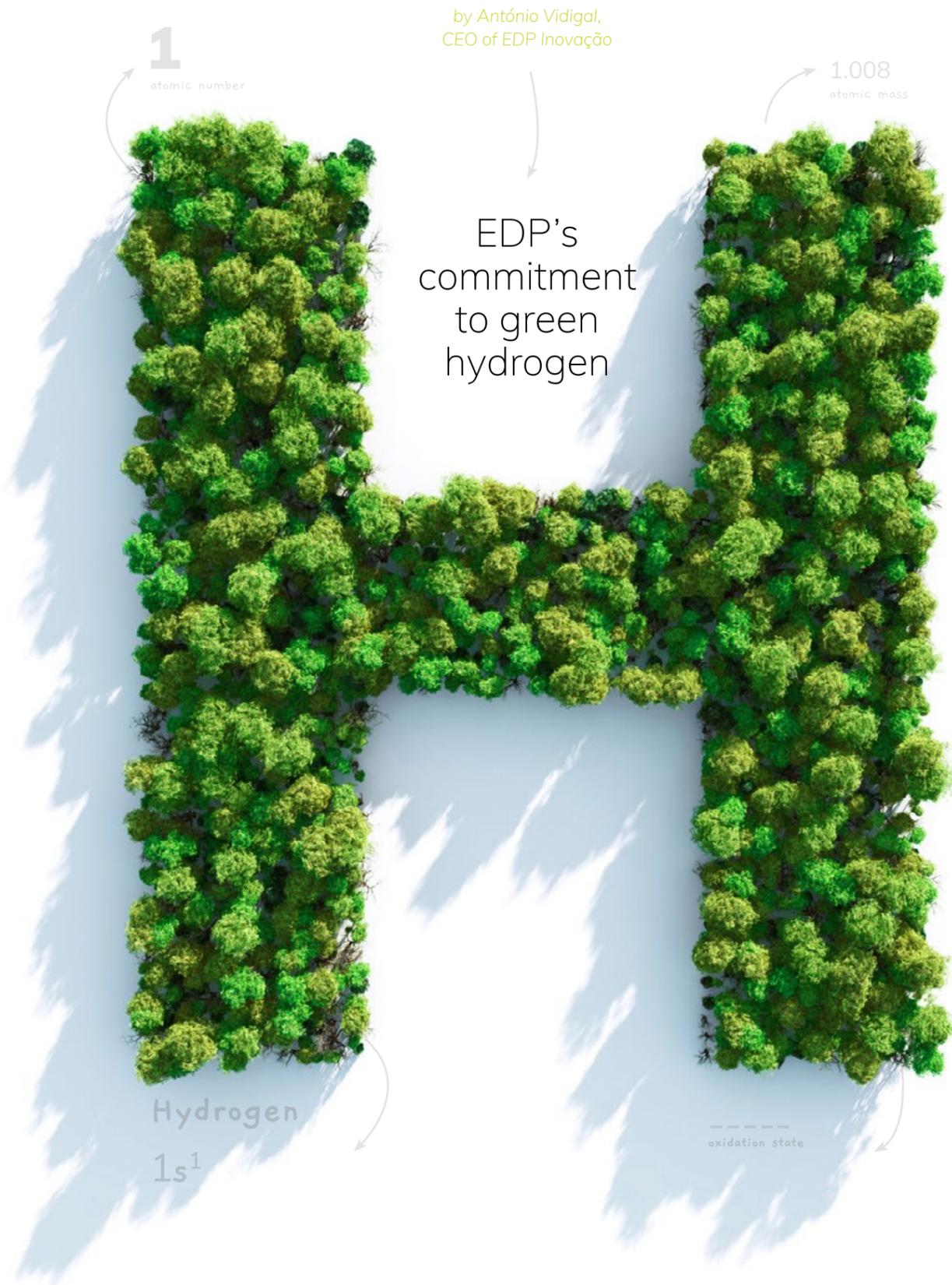
**conventional energy sources  
blown away by  
the competition**



When EDP Renewables and ENGIE were looking for a name for this project, they asked a team of scientists to identify the sound of wind using the Roman alphabet. Using a specific algorithm and equipment for transcribing sounds into letters, the sound of the wind was recorded at sea over the course of 48 hours. The most frequent sounds translated into the letters "O" and "W." Thus was born Ocean Winds, a company that uses unlimited natural resources like the wind and the ocean to innovate.

This project is the result of a joint venture announced in 2019. The two companies share a strategic vision in which renewable energy sources, particularly those related to offshore wind, play a key role in the global energy transition. EDP Renewables and ENGIE are combining their offshore wind assets and project pipeline, with 1.5 GW under construction and 4 GW in development, with the goal of reaching 5 to 7 GW of projects in operation or under construction and 5 to 10 GW in advanced stages of development by 2025. OW's primary markets are in Europe, the United States and a few Asian countries, where most of the development has room to grow. This starting point, combined with the companies' accumulated experience in international expansion, allows OW to be more flexible and adaptable to diverse regions and cultural differences.

Within the framework of WindFloat Atlantic (WFA) and in conjunction with other partners, OW was involved in the development of innovative floating technology. This technology allows companies to take advantage of wind resources and generate energy in places where the water is too deep for bottom-fixed wind turbines, thereby gaining access to a wealth of wind resources that were previously inaccessible. These innovative wind farms also allow companies to reduce costs and ensure more stable wind speeds. Offshore stability is achieved through the use of water entrapment plates on the bottom of the three pillars, as well as a static and dynamic ballast system. The mooring technology used enables the installation of turbines at depths of more than 100 meters, and the design offers stability in extreme weather conditions. OW has a presence in seven countries, where it will continue to develop its current projects and create new growth opportunities.



Green hydrogen is receiving growing attention in Europe and around the world, and is being recognized as a key element for the acceleration of the energy transition. EDP is following this topic closely.

From a systemic point of view, hydrogen (H<sub>2</sub>) is an energy vector just like electricity. Like electricity, hydrogen is not a source of energy, but rather a means to transport it. Its name comes from Greek and means “water creator,” reflecting the fact that its combustion with oxygen produces water vapor, without generating pollution.

Although the decarbonization of the economy can largely be achieved, to great advantage, through its electrification, there are many types of energy use that are difficult to electrify, such as high-temperature furnaces, maritime and air transportation, and long-distance road transportation. Furthermore, H<sub>2</sub> is an essential raw material for many industrial processes. Almost all of this hydrogen is obtained from natural gas or coal, a process that generates a great amount of carbon dioxide. It's known as gray hydrogen. Approximately 100 million metric tons are produced this way each year. Two thirds of this hydrogen is used in petrochemicals and to produce ammonia.

Producing one metric ton of gray H<sub>2</sub> emits around ten metric tons of CO<sub>2</sub>, making the benefit of green hydrogen clear.

The dominant way of obtaining green hydrogen is through water electrolysis, which separates it into hydrogen and oxygen. This process generates no CO<sub>2</sub> and no pollution—if the energy used comes from renewable sources—but also consumes a lot of energy. As renewable energy sources are one of EDP's core businesses, the company is in a privileged position to take action in the green hydrogen sector. In light of this, EDP has been working on a set of initiatives that encompass a wide range of applications.

## Green hydrogen

Production of hydrogen from  
**offshore wind**

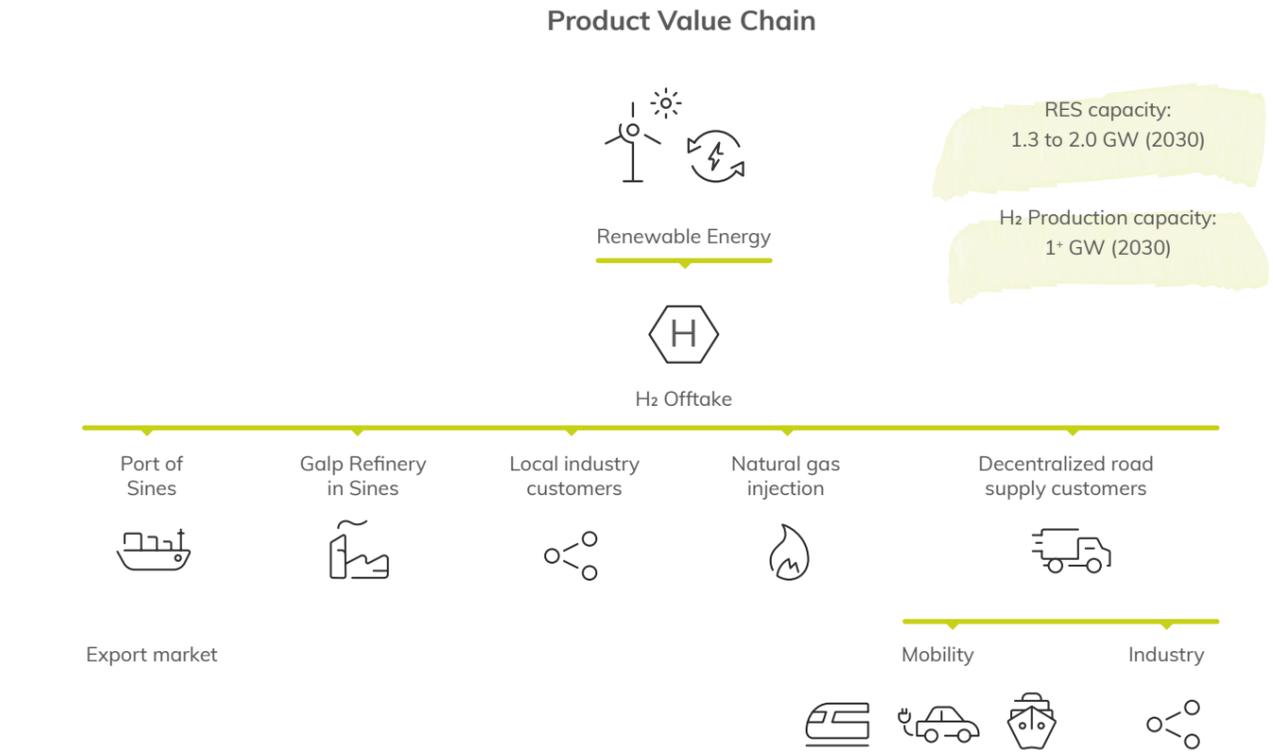
Offshore wind energy is on the rise—and EDP is strategically positioned in this sector. Considering the potential of offshore wind energy, the production of green hydrogen from this source is a possibility that has yet to be fully explored. In collaboration with other partners, EDP is studying the feasibility of producing hydrogen from this energy source.



Ribatejo Combined Cycle Plant

Project  
**FLEXnCONFU**

Using an electrolyzer with a capacity of 1 MW and 12 MWh of storage capacity, this pilot project represents an important step for the creation of knowledge regarding green hydrogen production. Implemented at the Ribatejo Combined Cycle Power Plant, the project tests the conversion of electricity to hydrogen, in order to explore the possibility of using it locally to increase the flexibility of load variations, thus reducing environmental impact. The production of ammonia in a laboratory setting is also being tested during the project. The project is supported by the European Union under the Horizon 2020 program (grant agreement ID: 884157) and is being developed together with a broad range of partners.



Project  
**H2Sines**

EDP—in partnership with Galp, REN, Martifer, Vestas and a Dutch consortium—is studying the creation of a green hydrogen cluster at the Sines industrial complex. This project aims to meet local demand in Sines, which has outstanding industry, as well as an excellent blend with natural gas from the REN network, hydrogen mobility and the exportation of green hydrogen to the port of Rotterdam. The project aims to reach 1 GW of electrolysis capacity by 2030. This will be done in phases, following the learning curve of the technology, and starting with a pilot project of around 10 MW. The project will employ a dedicated solar-wind hybrid renewable energy solution.



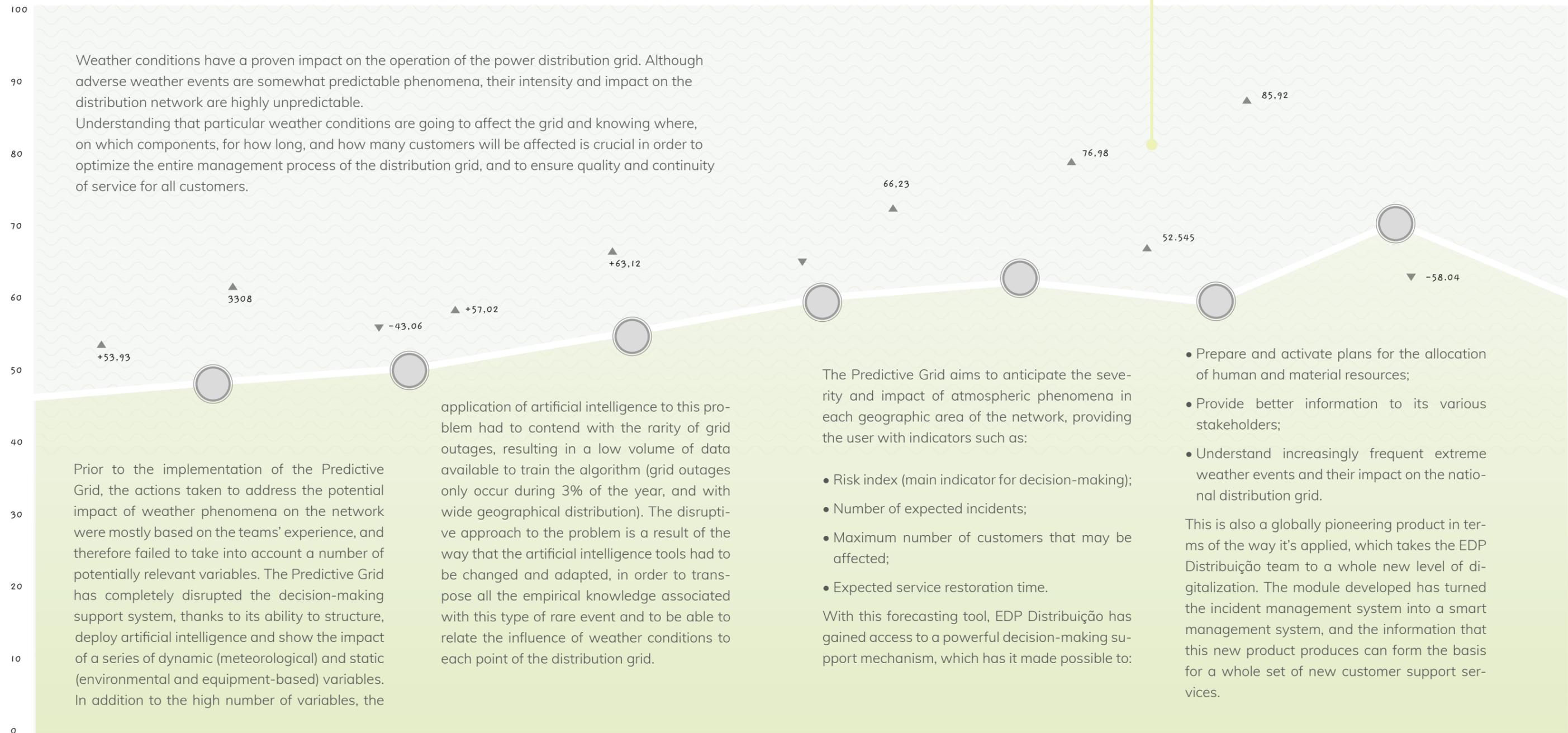
Mobility  
**Projects**

EDP is currently studying the establishment of hydrogen mobility pilot projects, together with local authorities and mobility operators. It should be noted that hydrogen is most competitive in heavy freight and long-distance passenger transportation.

# PREDICTIVE GRID

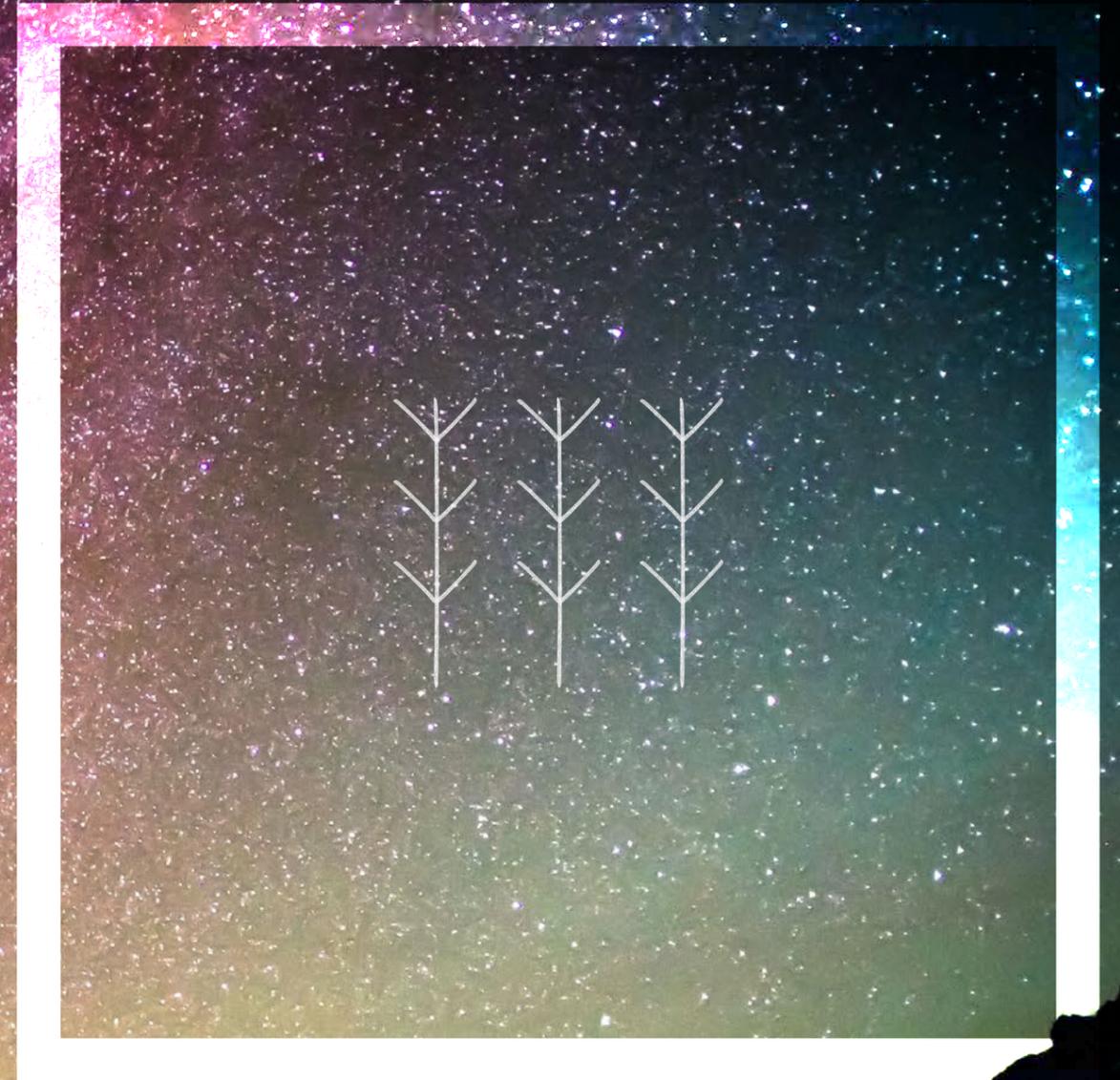
anticipating the future to act faster in the present

In recent years, EDP Distribuição has focused heavily on applying advanced analytical models to a variety of business areas. The Predictive Grid project, which began in 2017, was groundbreaking for the company—not only because it was one of the first projects to employ artificial intelligence, but also because of its application to a complex and infrequent problem.



07

Made of Us



Only those who will risk going too far  
can possibly find out how far it is possible to go.

T.S. Eliot

# WHO ARE WE?



## Production

Production is the first phase in the electricity sector's value chain. Electricity is produced from renewable or non-renewable energy sources. Energy produced through traditional sources comes mostly from coal, natural gas, nuclear and cogeneration, whereas for renewable sources, energy is essentially produced through water, wind and sun.

## Transport

In the transmission phase, the energy produced is then delivered to the transmission network consisting of very high voltage lines, which subsequently channels the energy into the distribution network. This recently established sector within the EDP Group is under development in Brazil, and at the end of 2018, the first batch of 113 km of network began operating.

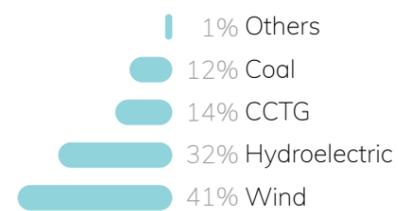
## Distribution

Next, in the distribution phase, the transported energy is channeled into the distribution network, which allows energy to flow to the supply points. Electricity distribution networks consist of high, medium and low voltage lines and cables. Substations, transformer stations and public lighting installations are also integral components of these distribution networks, as well as the necessary connections to consumer installations and power generation centers.

## Supply

In the supply phase, distributed energy arrives at the supply point, to be then sold by the supplier. Across the electricity and gas value chain, supply is the activity closest to the customer, and is responsible for the overall relationship with end users.

**27 GW**  
OF INSTALLED CAPACITY



**113 KM**  
OF OPERATIONAL NETWORK

**1,328 KM**  
OF TRANSPORT NETWORK UNDER CONSTRUCTION

**340,744 KM**  
NETWORK

**286,470 KM**  
OF AERIAL  
DISTRIBUTION CABLES

**54,274 KM**  
OF UNDERGROUND  
DISTRIBUTION CABLES



**80 TWh**  
OF ELECTRICITY DISTRIBUTED

**9,827,505**  
ELECTRICITY CONSUMERS

**5,041,722**  
FREE  
MARKET CONSUMERS

**4,785,783**  
FREE  
CONSUMERS

**1,599,232**  
GAS CONSUMERS

**1,509,811**  
FREE MARKET  
CONSUMERS



**4,785,783**  
LAST RESORT  
CONSUMERS

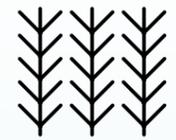
**67 TWh**  
OF ELECTRICITY PRODUCED

**66%**  
PRODUCED FROM RENEWABLE SOURCES



| 112 |

| 113 |



# WHERE WE ARE

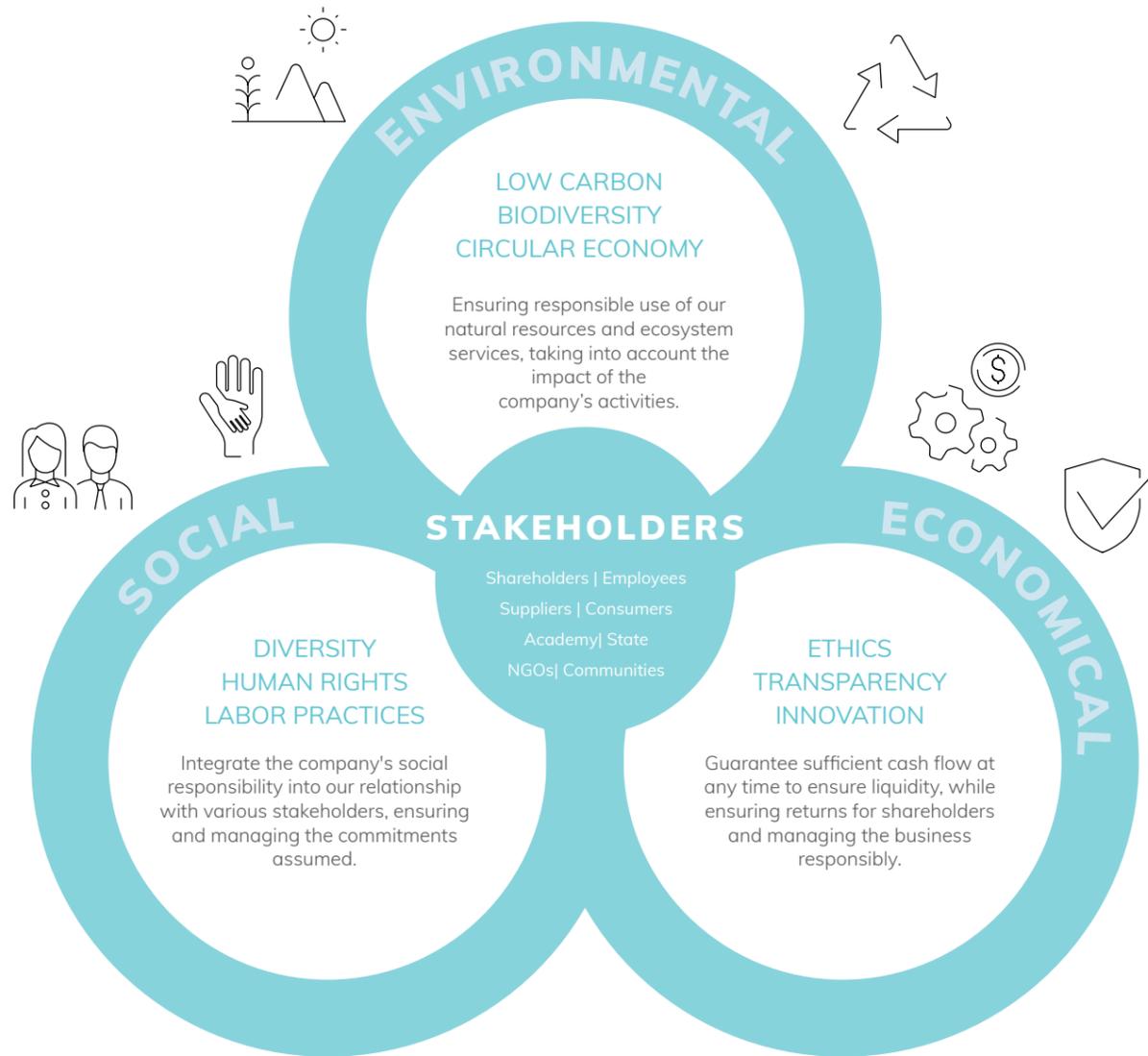
-  CONVENTIONAL PRODUCTION
-  RENEWABLE PRODUCTION
-  TRANSPORT
-  DISTRIBUTION
-  SUPPLY
-  OFFICES

- PORTUGAL    
- SPAIN    
- CANADA 
- COLOMBIA 
- USA 
- MEXICO 
- BRAZIL     
- PERU 
- CHINA 
- POLAND 
- ROMANIA 

- ITALY 
- UNITED KINGDOM 
- BELGIUM 
- FRANCE 
- GREECE 
- IRELAND 
- MOZAMBIQUE 
- NIGERIA 

# Three sustainability DIMENSIONS

Meeting the needs of current generations without compromising the ability of future generations to meet their own needs.



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**Acknowledgements:**  
António Castro  
António Coutinho  
António Martins da Costa  
António Vidigal  
Bordalo II  
Carla Barros  
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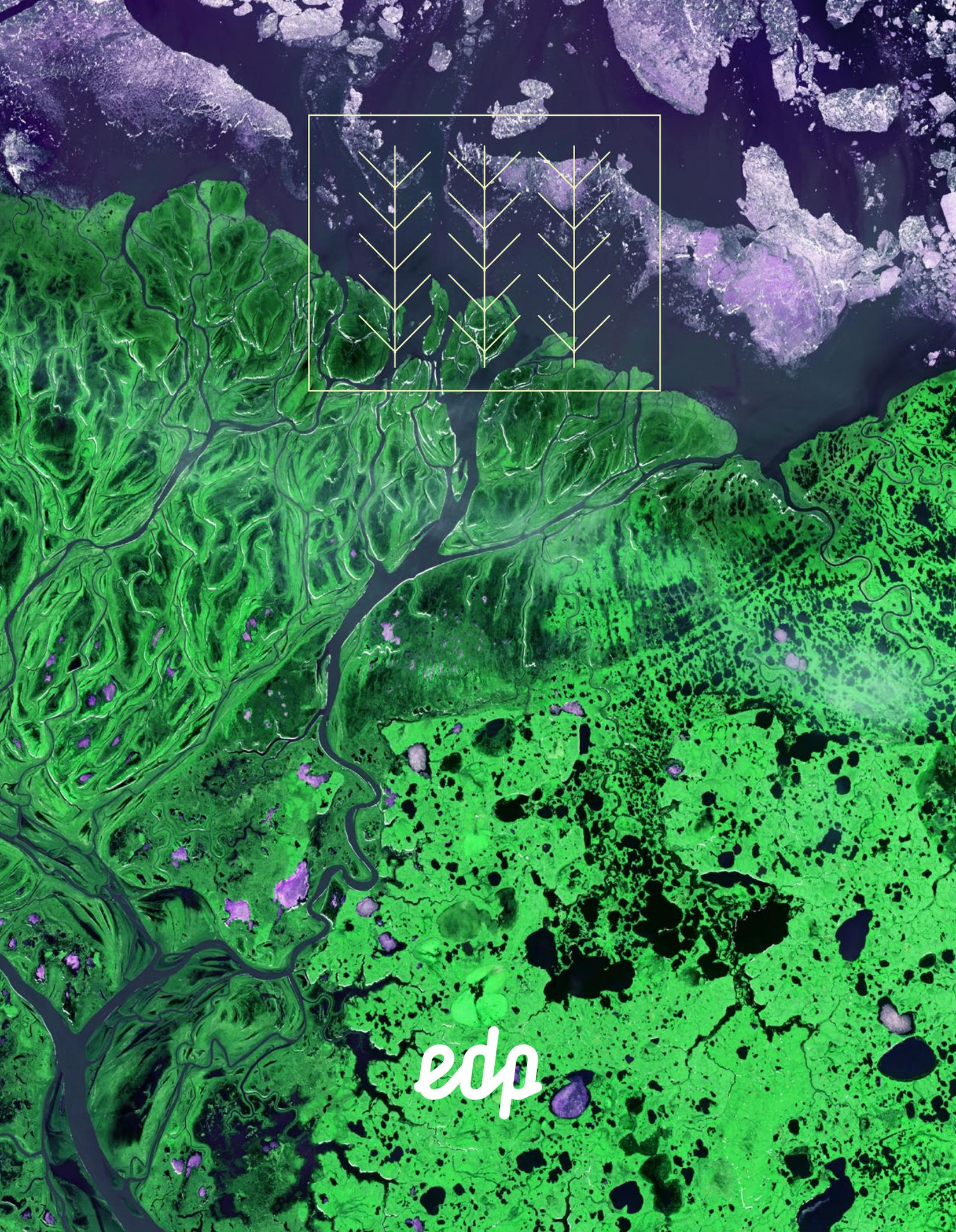
**Infographics:**  
Vanessa Oliveira

**Publication:**  
**Yearly**

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