

CLEAN ENERGY

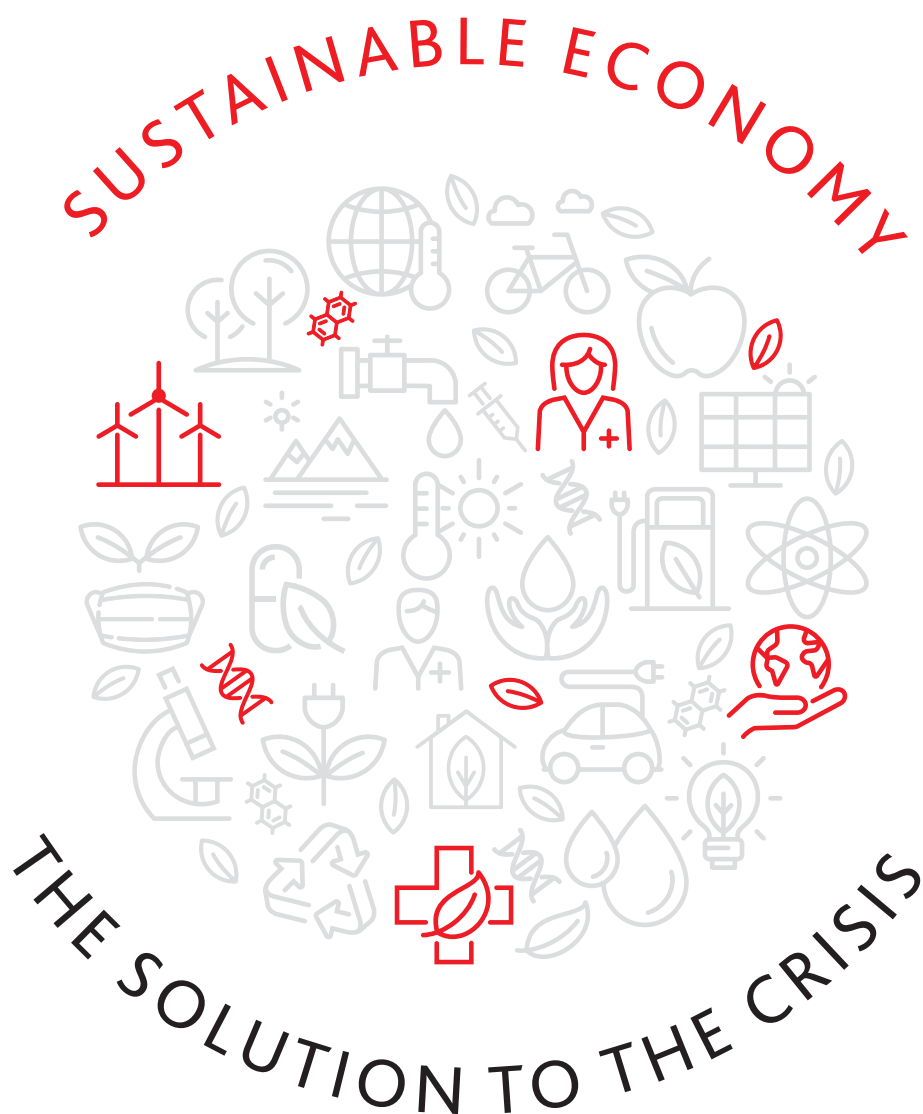
Deserts: Vital for the  
climate and limitless  
power generation

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INFRASTRUCTURE

Rehabilitation  
of buildings, the  
efficient alternative

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SO YOU CAN MAKE IT  
A HOME**



Houses to be filled with life, stories, plants, cushions, recipes and moments that you will never forget.



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NEGURI**



**Parc Domeny**  
Girona



**jardins  
de can llobat**

Sant Cugat

# DOUBLE OR NOTHING FOR THE FUTURE

The coronavirus and climate change show correlations across the board, from their causes to their solution. Both are crises able to rock the foundations of our social order and hinder our ability to forecast the future. In part, they are nature's response to a model of growth that's actually incompatible with long-term growth.

If they stem from some of the same causes, it's only natural that they share some of the same solutions. These are what we should be focusing on to make the post-Covid world a historic opportunity we were able to seize.

This opportunity is driven by necessity, and crystallizes in the form of audacity. The key is to ensure that the combined challenge of the pandemic and the climate emergency not only doesn't overwhelm us, but enables us to lead the solution to both problems. Sustainability is at the heart of that double or nothing bet for the future: it's precisely what will sustain it. In contrast to the 2008 crisis, the economic slowdown we are currently facing is of such magnitude that it requires an equally colossal capital injection, a sort of Marshall Plan for the whole planet.

We must, however, learn from past mistakes, such as the bad business of funding fossil fuel pollution. Prioritizing investment in sustainable pro-

jects — within the regulatory framework described by Joaquín Mollinedo in this edition — is not only a moral imperative, but a practical one.

Only then will growth be sustainable over the long term, with a growing population, sufficient development, and a green economy fueling the recovery of the ground we've lost in decarbonization and the fight against climate change.

We know why it must be done, and we have the means and the know-how to do it. ACCIONA is making it happen with energy-efficient building retrofitting, PV power generation at sites ranging from lakes to deserts, resilient infrastructure, and R&D aimed at combating microplastics. We want our brand to be a pilot project for the smart planet.

Sometimes the best course corrections are driven by disaster. Let's repeat history, or this particular aspect of it, on this occasion. ■

“ We must focus on the solution in order to make the post-Covid world a historic opportunity we were able to seize ”



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Vital for the global climate balance and for  
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**INTERVIEW**

**"THE PANDEMIC CALLS ON US  
TO SPEED UP SUSTAINABLE  
TRANSFORMATION"**

When the world woke up, climate change was still there. Joaquín Mollinedo  
— ACCIONA's Chief Institutional Relations, Sustainability and Marketing  
Officer — believes a sustainable economy and legislation are more necessary  
than ever with the Covid outbreak.



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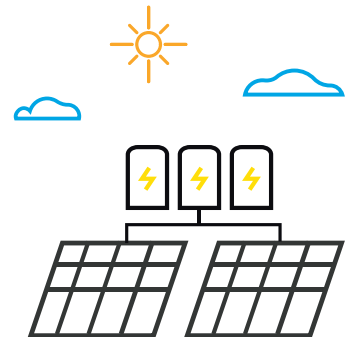


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## SUSTAINABILITY

### COVID AND CLIMATE SHARE THE SAME SOLUTION

Large-scale green investment, the formula to stave off economic recession and make up for time lost in the fight against an even greater enemy: the climate emergency.



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Masks and gloves on the ground? Making mountains of trash even bigger? CLIMATICA won't stand for that.

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## INFRASTRUCTURE

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The rebirth of old buildings amidst the birth of the new city. An economic driver to meet the sustainable objectives of the Smart City model.





# YOU DRIVE BETTER ON DATA

Digitalization in road design and construction is a **win-win model**. Performance efficiency gains save time and money, prevent errors, and improve safety.

**ACCIONA has constructed over**

**5,000**

**km of roads and manages**

**1,300**

**km of roads under concession**

**Its digital management of massive amounts of project documentation enables:**

**0** paper

**100%** real-time transmission of design progress information, which substantially reduces the number of errors.

It also reduces lost delivery notes to

**0** and processing time by **70%**

**Its monitoring of earthworks via GPS or Artificial Intelligence enables:**

Productivity gains of **+ 15%** and traceability of **100%** of materials.

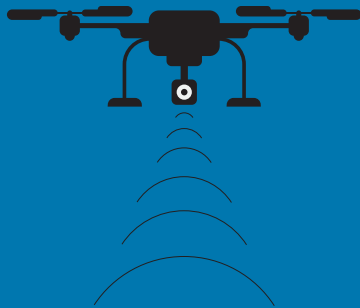
**Data is collected from the site by drones and LiDAR, allowing for a**

**70%** reduction in work performed by field teams.

**Survey data is loaded into visualization and analysis programs that reduce visits to the site and the number of permits needed to close areas to traffic:**

Workers spend **90%** less time in high-risk areas.

And **50%** less specific training (working at heights, working in confined spaces, etc.) is required.



### E-6 Ranheim–Værnes Highway (Norway)

- A **4-lane** highway stretching **23 km**, **8 km** of which is underground, with **3 tunnels** between **1.6** and **4 km** long. Construction: **2019–2024**.
- ACCIONA is making use of the old road to minimize raw material requirements and nuisance to residents.
- Data was collected via airborne LiDAR and mobile mapping in just **3 weeks**, with a team of **7–8 people**. The conventional system would have required a larger team working for at least **3 months**.

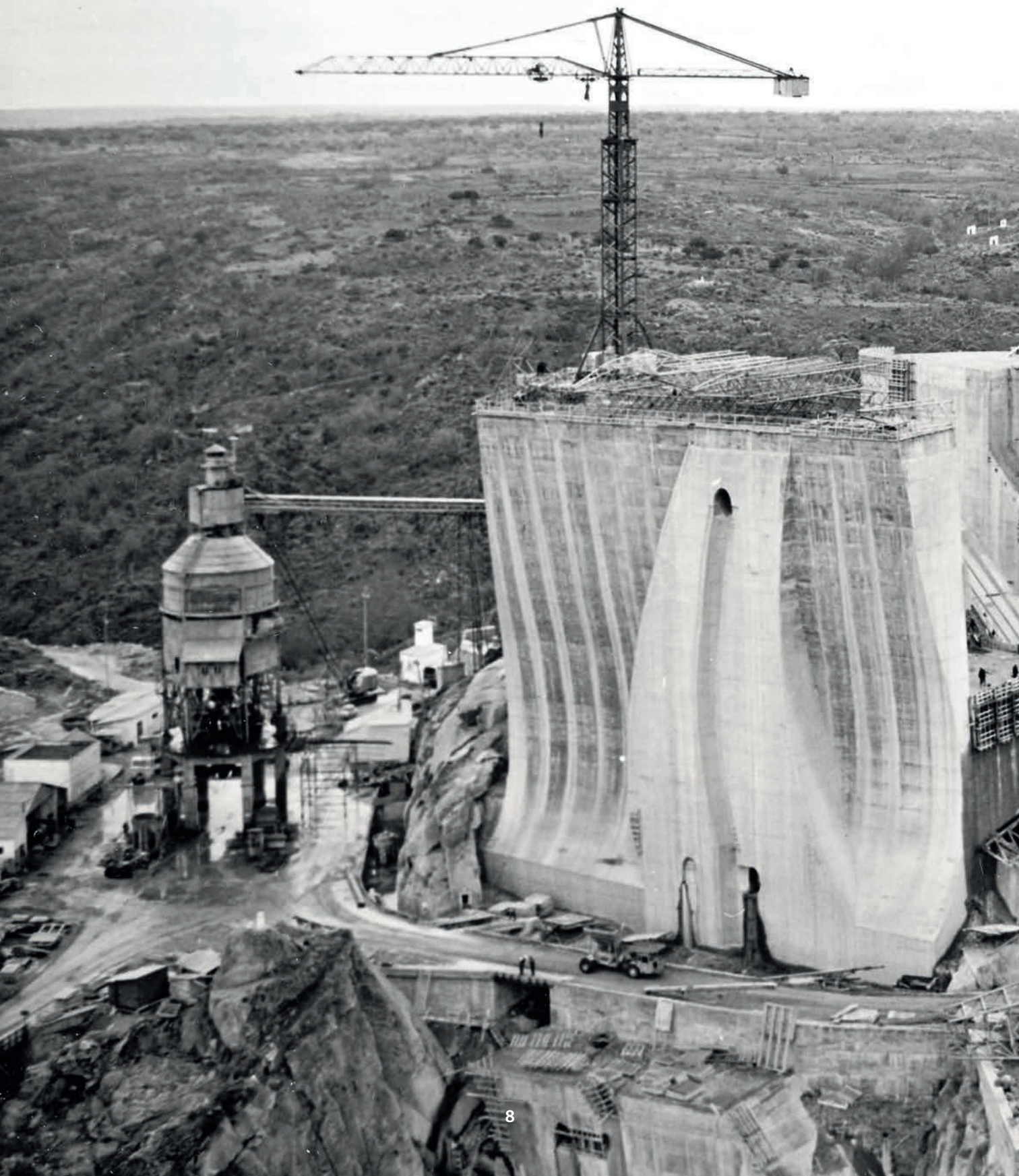
### Highway over Roskilde Fjord (Denmark)

- An **8.6 km** road with **10 structures**, including overpasses and underpasses, and a **1.36 km** bridge over the fjord built with prefabricated concrete segments.
- Construction time: **2 years**, a short period made possible by digital tools, among other measures.

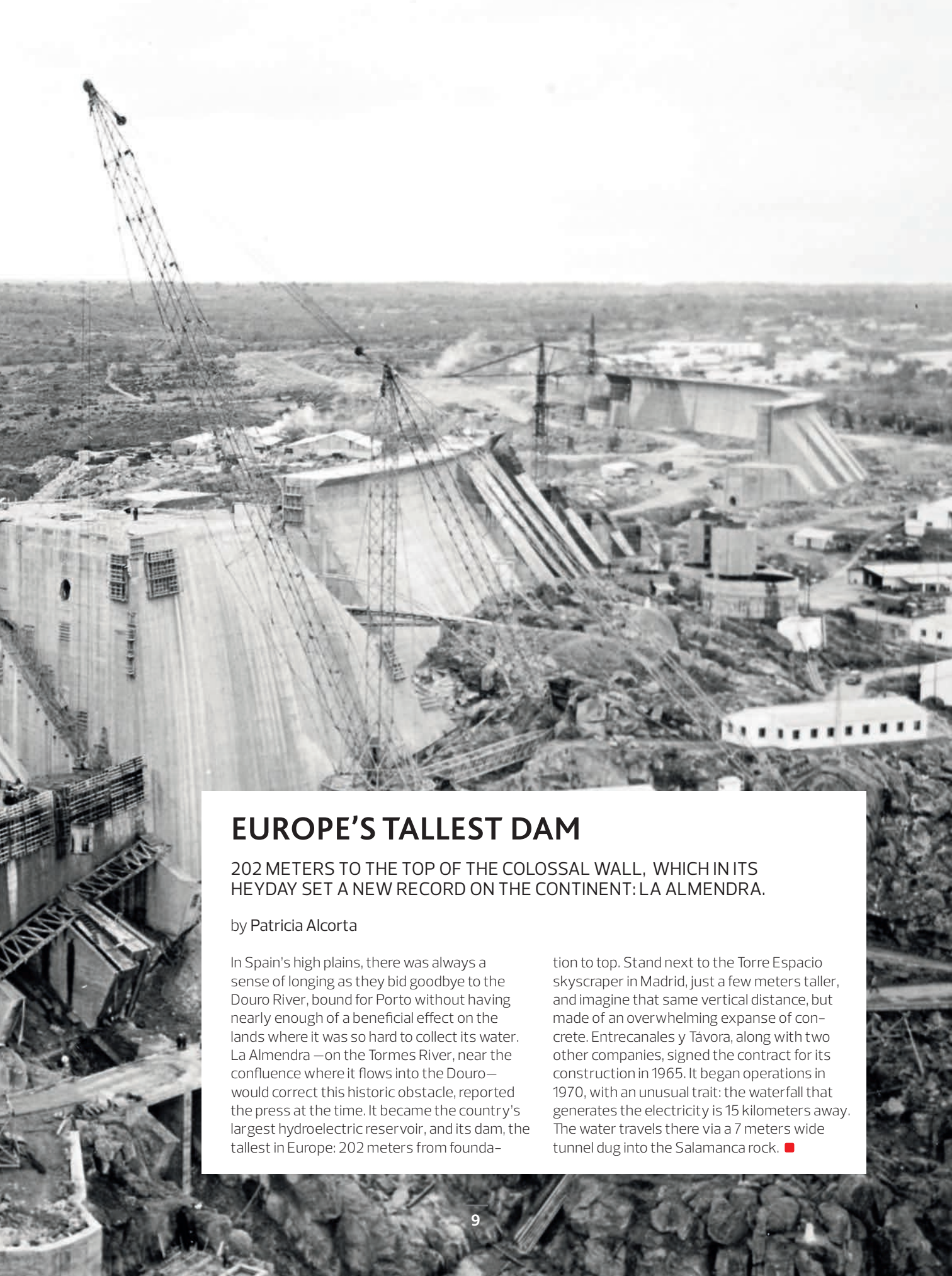
### Second Range Crossing (Toowoomba, Queensland, Australia)

- A **41 km** bypass with an **800-meter-long** viaduct, **5 interchanges**, **24 structures**, and cutting-edge geotechnical treatment over very rugged terrain.
- Construction: **2015–2019**, a short period made possible thanks to digitalization of design and construction. Funding, operation and maintenance for **25 years**.
- The bypass reduces the travel time of freight and heavy goods vehicles between inland Australia and Brisbane and its port.
- It has created **1,800 jobs**.









## EUROPE'S TALLEST DAM

202 METERS TO THE TOP OF THE COLOSSAL WALL, WHICH IN ITS HEYDAY SET A NEW RECORD ON THE CONTINENT: LA ALMENDRA.

by Patricia Alcorta

In Spain's high plains, there was always a sense of longing as they bid goodbye to the Douro River, bound for Porto without having nearly enough of a beneficial effect on the lands where it was so hard to collect its water. La Almendra —on the Tormes River, near the confluence where it flows into the Douro— would correct this historic obstacle, reported the press at the time. It became the country's largest hydroelectric reservoir, and its dam, the tallest in Europe: 202 meters from founda-

tion to top. Stand next to the Torre Espacio skyscraper in Madrid, just a few meters taller, and imagine that same vertical distance, but made of an overwhelming expanse of concrete. Entrecanales y Távora, along with two other companies, signed the contract for its construction in 1965. It began operations in 1970, with an unusual trait: the waterfall that generates the electricity is 15 kilometers away. The water travels there via a 7 meters wide tunnel dug into the Salamanca rock. ■

# ACCIONA RESISTS THE ECONOMIC IMPACT OF THE PANDEMIC

NET PROFIT FALLS BUT INVESTMENT HOLDS STEADY AND PROJECTS GROW



Health measures and lockdowns in numerous countries have had profound economic effects. Despite the complicated situation, the company managed to concentrate the impact in the second quarter, maintain a solid financial position, and protect its growth plans. As a result, it is well placed as we head into the post-Covid recovery. In the first half of the year, it posted a net profit of €22 million (-85.7%, due to its stake in Nordex assessed using the equity method). Total revenue was €3.04 billion (-14.8%),

reflecting a drop in energy prices and some Construction and Services activities, and EBITDA was €499 million (-29.1%), a figure that reflected an impact from Covid-19 of €144 million. Net ordinary capex maintained a robust pace, with €484 million invested largely in developing renewable capacity. The Infrastructure portfolio grew by 6.8%, to €12.16 billion, and 293 MW of new installed capacity was added to the Energy business, with another 781MW under construction.

## THE WORLD'S LARGEST MOTORCYCLE SHARING

A fleet of 10,000 zero-emission motorbikes that run on 100% green energy. Upon achieving this milestone, ACCIONA became the world's largest shared motorcycle company in terms of number of vehicles. The service operates in Madrid, Barcelona, Valencia, Seville, Zaragoza, Milan, and has just been rolled out in Rome with a fleet of 500 vehicles. Since its launch in 2018, it has prevented the emission of 1,100 tons of CO<sub>2</sub> and its bikes have covered enough kilometers to travel around the Earth more than 330 times.







## 10-YEAR AGREEMENT TO SUPPLY POWER TO TELEFÓNICA

### SPAIN'S LEADING 100% RENEWABLE ELECTRICITY RETAILER

It has just been confirmed by Spain's National Commission of Markets and Competition (CNMC): ACCIONA, via its subsidiary ACCIONA Green Energy Developments, has been the Spanish domestic market's leading green energy retailer since 2019. According to data from the CNMC's system of guarantees of origin and labelling for electricity, ACCIONA supplied its customers with 5,923 GWh of certified renewable electricity, 11.5% of the total renewable power supply accredited

by the body. The company also made a new strategic move in the same direction by signing its first PPA (Power Purchase Agreement) in Spain, with iconic company Telefónica. Under the agreement, which strengthens Telefónica's international commitment to decarbonizing its activities, ACCIONA will supply the company with 100 GWh of green electricity per year for 10 years, to power its data processing facilities, offices, and work centers in Spain.



## CONTRACT TO EXPAND VANCOUVER'S SUBWAY SYSTEM

The agreement is historic on two counts: its budget (€1.82 billion) and its strategic value in the city's sustainable mobility strategy. An ACCIONA-led consortium was chosen as the preferred proponent for the Broadway Subway Project to design and construct a 5.7 km extension to the Millennium Line (part of which will be underground) that will include twin tunnels with an excavation diameter of six meters, six new stations, and ancillary facilities. The project, to be completed in 2025, will help reduce traffic congestion and will save passengers an average of 30 minutes of traveling time per day.



## CONSTRUCTION OF TWO EXPRESS ROADS IN POLAND

In consortium with its Polish subsidiary, Mostostal Warszawa, ACCIONA was awarded the contract to design and construct two new roads with a combined budget of €642 million. The first is a 10.3 km stretch of the S19 expressway that will run from the Rzeszów Południe junction to Babica, in southeast Poland. It will include a double tunnel over two kilometers long that reaches a maximum depth of 70 meters. The second is a three-lane 12 km highway between Żaluzki and Modlin Airport (near Warsaw). The consortium will also build two junctions and parallel service roads, and during construction it will keep two lanes open in each direction to minimize the inconvenience.

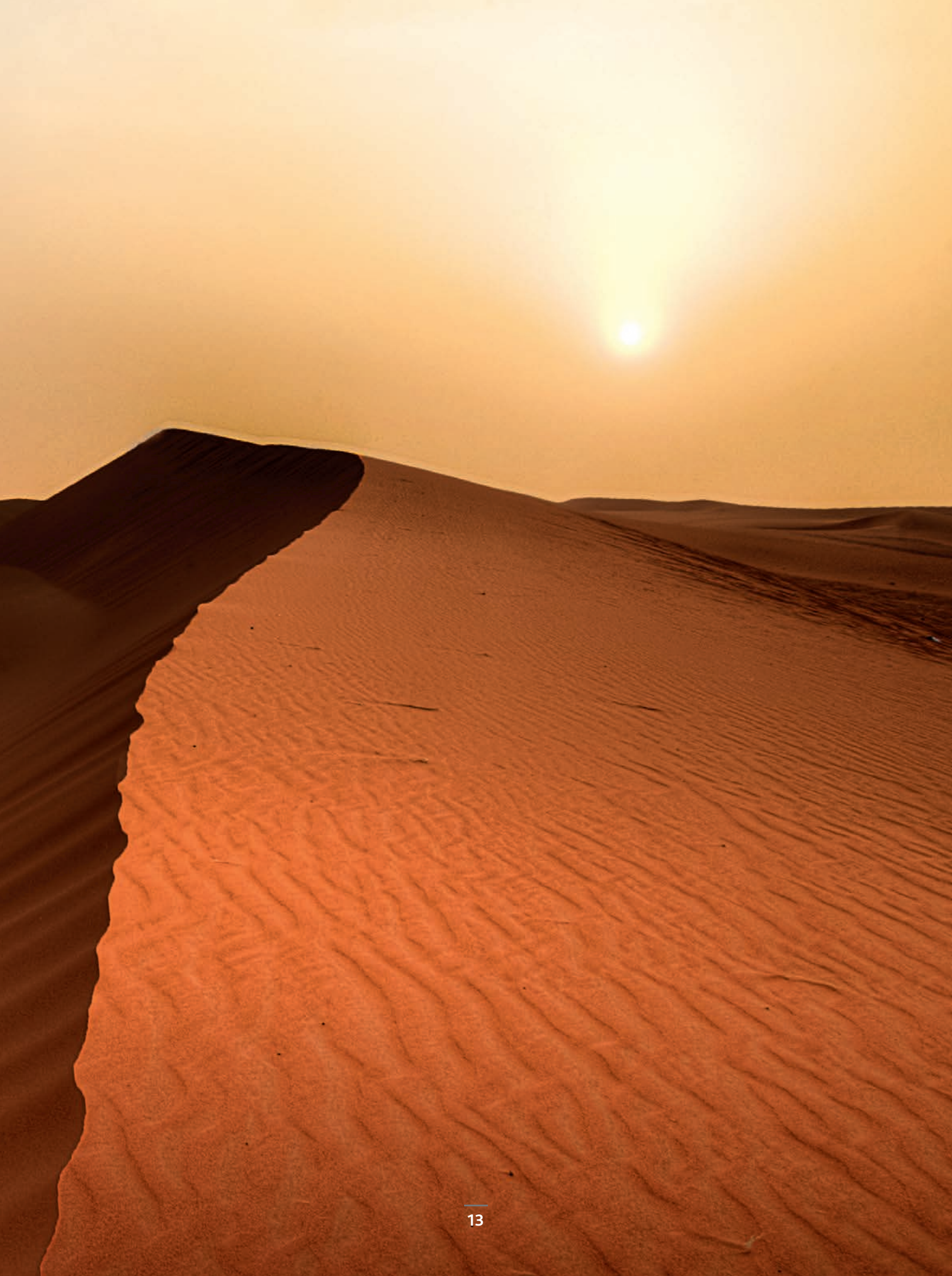
DESERTS

# AN ENDLESS SOLAR PANEL

"PLEASE DO NOT HURRY ON. WAIT  
FOR A TIME," SAID THE LITTLE  
PRINCE ON THE SUBJECT OF  
COMPREHENDING DESERTS. WITH  
THEIR IMMENSE RESERVE OF SOLAR  
RADIATION, THEY PLAY A VITAL ROLE  
IN THE CLIMATE BALANCE AND IN  
OUR PLANET'S SUSTAINABILITY.

  
by Juan Pablo Zurdo







*ELWITSCHIA  
MIRABILIS: SO  
FRAGILE IN  
APPEARANCE IT  
SEEMS IMPOSSIBLE IT  
COULD LAST A SINGLE  
DAY IN THE MIDDLE  
OF THE NAMIB  
DESERT, BUT IT CAN  
LIVE A THOUSAND  
YEARS. IT'S NAMIBIA'S  
NATIONAL PLANT,  
AND IT'S A MARVEL.*

The addax, a regal antelope so well-adapted to drought that it can survive with almost no water, living only on that contained in plants like the acacia, is in danger of extinction due to indiscriminate hunting.

These two extraordinary species ask for very little to live on, yet they provide us with an example of specialized design with enormous scientific value that goes beyond the merely symbolic. Deserts are like the welwitschia and the addax. Harsh but generous, austere but vital; minimalist in appearance, but with a sophisticated climate mechanism we're just beginning to understand.

Tons of airborne dust flies from Africa to the Amazon, full of phosphorus that fertilizes its land. The desert thus nourishes the jungle, promoting the

generation of oxygen and its role as a major carbon sink. In turn, this vegetation prevents landslides and the loss of fertile soil layers during floods. Deserts deter desertification.

They absorb heat from the air and reduce the risk of cyclones. They sequester CO<sub>2</sub> into the soil and help prevent emissions at source by enabling renewable energy generation. Photovoltaic plants already do this, but on a scale vastly inferior to the latent potential of our deserts, which cover 25% of the Earth's land surface. It's estimated that the solar radiation they receive in a single day would cover human energy consumption for an entire year. And that 0.3% of the Sahara could meet all of Europe's needs.

Lack of water, poor soil quality, too much sun... Factors that always seemed to add up to uselessness, impracticability, and even danger, now offer a wealth of possibilities. "It is precisely these vast uninhabited areas, considered unproductive due to their radiation, which are the Earth's solar reactors. In just a few decades, solar and wind technology will be fundamental for electricity generation," explains Joaquín Ancín, Director of Engineering and Construction at ACCIONA's Energy business.

## NEW ECONOMY

By definition, this contribution to the decarbonized economy benefits the entire planet. But some regions benefit more than others. "A growing number of people have access to electricity, which means expanding infrastructure and improving technology so that developing countries have clean energy is a crucial part of the 2030 Agenda for Sustainable Development. A plant also stimulates employment, taxes, and professional training in its surrounding area," says Miguel Ortiz de Latierro, Director of Sustainability, Health & Safety, Environment and Quality for ACCIONA's Energy business. ACCIONA builds and manages PV plants in almost every suitable environment, but it has developed specialized projects in arid zones in Chile, Egypt, Mexico, and South Africa. It bears repeating that these singular geographic zones are contradictory: while they pose challenges, they also offer advantages, as we will see below.



## PLANT OASIS

ACCIONA's desert holdings include:

- **Benban. Sahara, Egypt.** Consisting of three photovoltaic plants, this complex is a strategic element in the Egyptian government's renewable energy development plans. It can produce enough energy to supply 150,000 homes.
- **Sishen. Northern Cape Province, South Africa.** The largest and most sparsely inhabited province: a land of diamonds, iron, vineyards... and clean energy. Construction lasted 15 months and created 1,000 jobs, 94% of which went to South African citizens. 2.1% of its revenue is invested in local socio-economic development projects.
- **Almeyda. Atacama, Chile.** It will meet the energy needs of 80,000 households and prevent the emission of 162,000 tons of CO<sub>2</sub> per year. The Chilean government is implementing a development plan devoted wholly to harnessing solar energy in the Atacama Desert, which has the highest solar radiation on Earth.
- **El Romero Solar. Atacama, Chile.** Upon construction, it was the largest solar plant in Latin America and one of the largest in

the world. Its PV modules cover a surface area equal to 211 football fields, and it was delivered two months ahead of schedule. It boasts an innovation hub that tests new photovoltaic technology such as bifacial modules

- **Usya. Atacama, Chile.** It will produce enough energy to supply 70,000 homes and will begin operation this year.
- **Together, ACCIONA's desert plants,** including Puerto Libertad (Mexico), generated 95.7 million euros and 3,000 jobs for their countries in 2019. In a straight line, their combined 3.2 million PV modules would stretch 2,529 kilometers.

Bountiful in terms of generation, but challenging at the operational level. Extreme temperatures put both materials and people to the test.

DESERTS NOURISH  
THE AMAZON JUNGLE,  
PROMOTING THE  
GENERATION OF OXYGEN  
AND ITS ROLE AS A  
MAJOR CARBON SINK



## HOW TO BUILD PUERTO LIBERTAD IN SONORA, MEXICO (IN RECORD TIME)

- **Climate.** Necessitates careful planning of shifts, schedules, activities, and working conditions, which must be adapted to the temperature. The workforce numbered 600 employees on average, rising to 1,300 at peak times. 70% were from the local region.
- **Location.** Remote, sparsely populated areas. Requires setting up camps with appropriate sanitation and administration for all workers, logistical organization of all materials, components, and machinery to be used, and detailed study to ensure continued deadline and cost compliance.
- **Respect for the environment.** The first step is to save local animals and plants. In Puerto Libertad, 30,000 specimens of 14 different plants, more than 1,000 mammals, and over 1,400 reptiles (lizards, chameleons, iguanas, snakes, etc.) were rescued.
- **Task sequencing.** Site leveling, soil preparation, and mapping out 40 km of internal roads. Installation of beams, rotary systems, support structures, panels, power inverters, substations, and a control center. Construction of a residential area and a multipurpose building with eating areas, a gym, and a laundromat. All designed to withstand the climate conditions and enable safe living.
- **Record figures.** Assembly of 1.2 million panels in barely two months, despite the cold and heat. The record in a single day: installation of 43,080 modules. In a straight line, all of the support structures would stretch from Mexico City to Houston: 1,212 kilometers.
- **Social benefits.** This sea of polycrystalline silicon generates enough energy to power 583,000 homes and prevents the emission of CO<sub>2</sub> with a purifying effect greater than that of 46 million trees.



Some of the desert's advantages are also its greatest challenges. Remote sites facilitate land availability due to the lack of urban pressure, but they entail building all necessary infrastructure on site, from scratch.

### STUDY, UNDERSTAND, CARE FOR

The company conducts in-depth analysis of a site's ecosystem to identify any weak points. It commissions an exhaustive environmental impact study that must be approved by the relevant authorities in each country, as well as a list of measures to lower the impact during construction and restore the affected land after the work is complete. It rescues all salvageable specimens of protected species for replanting, such as some of the cactuses from its Chile and Mexico sites, and transports the local fauna to similar habitats with minimal conveyance. It also assesses the effectiveness of each of these measures.



A full-page portrait of Joaquin Mollinedo, a middle-aged man with grey hair, wearing a dark blue suit jacket over a light blue button-down shirt. He is standing outdoors with a blurred green background of trees. The lighting is bright, suggesting a sunny day. A white text box is located on the left side of the image.

Joaquin Mollinedo  
joined ACCIONA in  
2008, after putting  
his expertise in  
regulation and  
institutional  
relations to use in  
public and private  
companies.



**Joaquín Mollinedo**

Chief Institutional Relations, Sustainability  
and Marketing Officer at ACCIONA

**“THE PANDEMIC  
CALLS ON US  
TO SPEED UP  
SUSTAINABLE  
TRANSFORMATION”**

by **Juan Pablo Zurdo** photos **Jacobo Medrano**

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## COVID AND CLIMATE CHANGE: A PAIRING THAT WOULD HAVE OVERWHELMED ANYONE BEFORE THE PANDEMIC.

Today, they are part of “new normal.” But if there’s one thing that times of rapid change show us, it’s that our ability to adapt also speeds up. Even as we lament the tragedy, our focus turns to overcoming it. According to Joaquín Mollinedo, Chief Institutional Relations, Sustainability and Marketing Officer, we should prize the lessons of Covid-19 precisely in order to avoid a repeat of past errors. It teaches us that we must avoid making the mistakes made in the past, such as investing in obsolete models. That novelty must not distract us from a pre-existing threat that’s much greater in scope: climate change. And that a single solution is valid for both problems: a much more intense, necessity-fueled transformation towards a sustainable economy. His education and professional experience in both the public and private sectors enable him to reflect on a topic of key importance: regulatory frameworks that foster green investment.

### **Will Covid-19 mark a turning point in our way of life?**

I’m not a great believer in abrupt paradigm shifts. Humanity always evolves towards pro-

gress, but not necessarily in a straight line or with radical changes in direction. Rather, it is through advances and setbacks, in a zig-zag pattern. There are many lessons to be learned from this crisis, and some attitudes and habits are sure to change. We’ve suffered the materialization of some of the risks and limitations of living in big cities, and we have admired the spirit of solidarity that emerges in such circumstances. We’ve learned to use tools that facilitate the implementation of organized, efficient telecommuting models. We’ve seen that widespread confinement made it possible to cut the planet’s CO<sub>2</sub> emissions by 8% this year, and that this won’t be enough to enable us to meet the ambitious global targets in this area. This compels us to reflect on the need to step up our ambition and the decarbonization of an economic model that was already in question, one that the pandemic is forcing us to review head-on.

### **Is the pandemic’s emergence on top of climate change nature’s way of warning us that we must change course?**

The economic crisis triggered by the pandemic is rooted in an external and, let us hope, circumstantial phenomenon, provided that science is able to find a vaccine in the near future. The threat of global warming is as lethal as the pandemic. Its scope is also global and, moreover, structural, with long-term effects. Just five years have passed since the Paris Agreement, and pollutant emissions have only risen since then. At present, the health crisis and its economic consequences are obviously a priority, but we can’t forget the climate crisis. We must keep working to flatten the emissions curve, in addition to stemming the health crisis and its economic effects with solutions that allow us to build more resilient societies underpinned by sustainable development models that enable us to tackle the climate crisis.



A man with grey hair, wearing a blue suit and a light blue shirt, stands with his hands in his pockets in front of a large, textured concrete wall. To his right, red arrows point from text boxes to specific percentages. The top arrow points to '93%' and the middle arrow points to '83%'. A third arrow points from a text box at the bottom to the '83%' figure. The background is a clear blue sky.

**93%**

of all  
investment

**83%**

of EBITDA  
in 2019

These are the percentages of ACCIONA's audited financial results that meet the best practice criteria of the new EU Taxonomy for decarbonization and sustainability.



## MORE PERSONAL

**If you had to choose another profession?**

Undoubtedly, it would have been whatever path I might have taken working as a lawyer, which is the profession I actually did choose, and one I practiced for quite some time.

**A personal motto?**

"Time and I, against three." They say it was a phrase used by Ferdinand the Catholic.

**Your favorite song, book, and movie?**

It's hard to choose, but right now Renée Fleming's rendition of *Hallelujah*, by

Leonard Cohen, springs to mind.

A book: almost all of them leave an impression, but let's say, for example, *Bommarzo*.  
Movies: two: *Chariots of Fire* and *The Great Beauty*.

**A hobby you can't live without?**

Golf and rugby (in equal measure), provided I can enjoy them close to my family, and with some time left over for reading.

**An invention you'd like to have patented?**

A cheap, inexhaustible source of clean energy.



**Could the current situation foster the sustainable transformation?**

In previous global crises, people thought the world couldn't afford a green growth program, and a lot of resources were invested in projects with a negative social or environmental impact and benefits that were at best short-lived. We must not repeat these mistakes. The efforts we're making now to sustain traditional development models based on the fossil fuel economy will translate into obsolete, useless assets in under a decade. We need to channel our resources into an economic and social model that's more sustainable and can better withstand future systemic crises. At the same time, we must tackle short-, medium-, and long-term challenges such as creating employment quickly to overcome the current crisis and improving our preparation for future threats, including the most pressing

one: climate change. The solutions for tackling both challenges are the same, and revolve around green recovery and growth.

**Is the regulatory framework a key factor in stimulating these solutions?**

Yes. The European Union has positioned itself at the forefront of this global effort to manage the crisis through decarbonization policies that promote sustainable recovery and growth. The Next Generation EU plan for 2020-2024 formalizes Europe's pre-pandemic commitment, identifying the Green Deal as the cornerstone of sustainable recovery to enable the Union to tackle the current economic crisis and achieve carbon neutrality by 2050. In Spain, various initiatives are in line with this goal, such as the National Integrated Energy and Climate Plan (PNIEC) and the recent Draft Bill on Climate Change and

Energy Transition. It's very positive to have laws that offer stimulus, predictability, and certainty for sustainable investment, enabling companies like ACCIONA to be part of this transformation. The Next Generation program has a budget of 750 billion euros, and the PNIEC entails investment of over 240 billion euros in Spain, with 80% coming from the private sector, which could create some 250,000 jobs per year over the next decade.

### **How do we ensure that capital flows into sustainable projects?**

The challenges in this area cannot be met, nor can the desired recovery be achieved, with public resources alone. In order for public-private partnership to attract private sector investment, it is essential to have clear rules that offer investors stability and legal certainty. Furthermore, this investment must be directed toward truly sustainable projects and solutions. European institutions have blazed a trail by approving a taxonomy of low-carbon activities that distinguishes between activities that effectively contribute to decarbonization and sustainability and those which are based on polluting models. Public policies and markets are also starting to make a clear distinction between the two, and to recognize those which generate economic, social, and environmental benefits.

### **Can ACCIONA lead this process?**

We have a long-demonstrated commitment to the targets of the Paris Agreement, to the Sustainable Development Goals (SDGs), and to fighting global warming. We are global leaders in renewable energy and sustainable infrastructure, and we are making strides in clean electric mobility, energy efficiency, and the circular economy. You could say that we are the first company in a new sector: that of low-carbon activities. All of our business lines are in harmony with decarbonization in every country that we operate in. We are familiar with the road map and can make a very effective contribution. The social needs are there, and there's capital avail-

**"IT'S VERY POSITIVE TO HAVE LAWS THAT OFFER STIMULUS, PREDICTABILITY, AND CERTAINTY FOR SUSTAINABLE INVESTMENT"**

able to meet them. Despite this, very few global players have the technical wherewithal, the international presence, and the balance sheet structure required to connect that supply with that demand. ACCIONA is one of them. ■

## **RESILIENT PROSPERITY**

"Sustainable infrastructure can be the foundation for a model of resilient prosperity aimed at creating employment, wealth and social welfare," explains Joaquín Mollinedo.

"Every euro invested in sustainable infrastructure generates almost double that amount in economic activity. Every million euros invested immediately creates roughly 14 jobs. Investment in sustainable infrastructure has a direct influence on the attainment of at least 72% of the SDG targets set in the areas of renewable energy, water, transportation, clean electric mobility, energy efficiency, and the circular economy, among others."

"Meeting these needs entails investing appropriately in the future and not in the past," concludes Mollinedo.





We're looking for a double vaccine: a medical preparation, of course, but also an economic remedy to stave off a colossal recession.





# A SUSTAINABLE VACCINE

PRESCRIPTION FOR THE 2008 CRISIS: AUSTERITY. FOR THE POST-COVID CRISIS, WE COULD, OR SHOULD, OPT FOR LARGE-SCALE STIMULUS INSTEAD. IT'S A GOLDEN OPPORTUNITY TO FOSTER SUSTAINABILITY AS AN ECONOMIC DRIVER AND MAKE UP FOR TIME LOST IN THE BATTLE AGAINST AN EVEN GREATER ENEMY: CLIMATE CHANGE.

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by  
**Miguel Ángel García Vega**



IT'S HIGHLY  
SYMBOLIC THAT  
AN ANIMAL AS  
BEAUTIFUL AS  
THE BLACK SWAN  
IS ASSOCIATED  
WITH DRAMATIC,  
UNPREDICTABLE  
EVENTS WITH  
PROFOUND EFFECTS.

Climate change and the pandemic share some common symptoms: unpredictability, denial, unsustainable development, and environmental degradation.

WWI, the Crash of 1929, the Great Recession of 2008, the current health crisis... Harvard University economist Roberto Barro calculates that every half-century (with an annual likelihood of 2%), an event occurs that will devastate a country's wealth.

Spain, and the entire world, are taking their first steps on the post-Covid planet, which is regaining the beauty of a white swan as a few certainties emerge. The crisis will give rise to a brand-new world, defined by new meridians and parallels. In a Twitter post, climate activist Katharine Hayhoe once defined the six stages of climate denial as: "It's not real. It's not us. It's not that bad. It's too expensive to fix. Oh no! Now it's too late. You really should have warned us earlier."

The old world that was home to this paradigm is vanishing. It no longer exists. Now, almost nobody doubts the reality of the climate emergency or the value of renewable energy in order to achieve net-zero emissions. Investment bank Goldman Sachs —adept at estimating absolutely anything by analyzing its own clients— calculates that an economic package of USD 1–2 trillion per year in green infrastructure investments could generate 15 to 20 million jobs worldwide.

The wind howls and the sun shines on our renewable planet, where there is an investment opportunity of EUR 14.1 trillion between now and 2030:









smart power grids, carbon capture projects, energy storage systems, etc. “The crisis shouldn’t entail a lessening of the growing efforts in recent years to move toward a more sustainable economy, but just the opposite,” says Julián Cubero, an economist at BBVA Research. “In fact, we know that persistent variations of temperatures above their historical patterns negatively affect GDP per capita.”

### ALONE ON THE TRAIN

A poem by Dámaso Alonso, entitled *Mujer con Alcuza* (Woman with an Olive Oil Bottle), tells of an old lady who walks through an empty train with growing anxiety over being alone and abandoned: “And this woman woke up at night, and she was alone, and she looked around her, and she was alone, and she began to walk down the aisles of the train, from one car to the next, and she was alone.” Solitude is the future that awaits those who don’t know how to comprehend or interpret the sustainable world.

Sometimes an urgent problem (Covid) is an opportunity to implement solutions to another, larger problem with longer-term implications (climate change).

Not even oil companies will be able to gain a foothold, or not much of one anyway. According to oil trader Trafigura, demand for crude oil will contract by ten million barrels per day, despite the artificial life support that the USA, Russia and Saudi Arabia want to give to sustain an industry that belongs to the past... and the past is a foreign country. And, just like the white rabbit in *Alice in Wonderland*, it’s “late, for a very important date / No time to say hello, goodbye.”

This relationship between speed and distance still remaining was highlighted by ACCIONA’s CEO and Chairman, José Manuel Entrecanales, at the UN Global Compact Summit in June. “Companies that represent 25% of the global market share have committed to cutting their carbon emissions in line with science-based targets, but that means that 75% of corporations still haven’t done so. Time is running out, and we can’t leave decarbonization targets in the hands of the business world. We need regulations that impose an obligation.”



“THE COVID RECOVERY MUST INVEST FOR OUR FUTURE, NOT FOR OUR PAST. TO DO THIS REQUIRES A NEW LEVEL OF MULTILATERAL COOPERATION AND POLITICAL WILL, SOMETHING FAR BEYOND THE AMBITIONS OF THE PRE-COVID WORLD. IF THE EVENTS OF 2020 DEMONSTRATE SOMETHING, IT IS THAT IT IS WITHIN OUR POWER TO TAKE TREMENDOUS ACTION WHEN FACED WITH A CLEAR AND PRESENT DANGER. THE CLIMATE CRISIS IS A THREAT TO ALL OF US. AND IT REQUIRES ALL OF US TO BE PART OF THE SOLUTION”

**BANKI-MOON**, former UN Secretary-General during the global compact summit (june)



# THE MEASURES TO OVERCOME THE PANDEMIC AND THE CLIMATE AND ECONOMIC CHALLENGES WE'RE FACING ARE ESSENTIALLY THE SAME

“A new paradigm is needed, wherein the sustainable economy and support for the companies that make it possible are a *raison d'état*,” argues Emilio Ontiveros, president of *Analistas Financieros Internacionales* (AFI). For the time being, the Green Deal proposed by the European Union includes a stimulus package of EUR 750 billion which, coupled with other allocations, provides historic financial firepower of almost EUR 2 trillion.

## GREEN SPENDING

If the 2008 crisis unleashed a wave of strict austerity across Europe, the idea now is to foster green spending, as sustainable energy brings a key factor into play. It acts to control inequality by means of its ability to create employment, thereby generating wealth and social stability. The effects are profound and far-reaching. Just spin the globe and pick a place. “The health crisis found the perfect ally in this planet of poor health, inequality, and uncertainty,” says economics Nobel laureate Paul Romer in an email message.

Less damage would have been done in a green world based on sustainable, circular development. “The world is renewable, and we are the only 100% green players on the planet,” says Rafael Mateo,





## THE ENERGY GAME

**Different rules, a different game,  
a different color (green)**

Think of the world as one big green chessboard. The players are the same: the knight, the queen, the pawn, the bishop... but their movements have changed. The game is different.

Investment bank Goldman Sachs has envisioned this new game and foreseen movements that were previously unthinkable. Demand for crude oil will fall by 7.9 million barrels per day by 2025, because there won't be a market for polluting fossil fuel. The pawns will lose strength and power.

Big oil companies will have to accept that the past is a foreign country, and next year they will increase their budgets by 14% to speed up the green transition. Time is nipping at their heels, moving as fast as any queen. Last financial year, that percentage was just 4%.

There's no doubt that renewables will become the linchpin of the game. For the first time in history, they will account for the largest share of spending: 25%. And shareholders want different companies, a different world, a different game. Decisions made by company owners in relation to the climate emergency have doubled since 2011.

The intensity of the game is reminiscent of the legendary clash between Bobby Fisher and Boris Spassky in Iceland, one of the European countries which, incidentally, is most committed to renewable energy. The match ushered in a new, modern way of understanding chess embodied by the American genius, in contrast to the old approach of the former Soviet Union. Two worlds collided. We saw it happen. Expanding our green infrastructure entails an investment opportunity of up to USD 2 trillion if we make a smart play based on public and private partnership. Our home, this old planet, is playing a game that can't end in a draw. There's only one possible move, and it's green.





## THE BIG OPPORTUNITY

Key ideas outlined by ACCIONA's Chairman and CEO at the recent summit of the UN Global Compact —made up of 10,000 companies and 3,000 non-business signatories committed to decarbonization—:

- The need to stimulate economies is a great opportunity to speed up investment in the infrastructure required to achieve the UN's Sustainable Development Goals.
- The measures needed to overcome the enormous social and economic challenges of our times are the same measures needed to overcome the pandemic.
- Swift, decisive action will turn these challenges into opportunities, creating new industrial sectors that are based on sustainability.
- More stringent sustainability regulations are essential to level the playing field between companies that reduce their emissions and those that don't.

CEO of ACCIONA's Energy business. He describes a scenario where photovoltaic panels are already a mature, competitive technology, where onshore and offshore farms boast optimal energy exploitation and “bring stability to prices and eliminate all of the volatility problems stemming from geostrategic factors that drag down oil and gas.”

The big picture becomes clear over 40 or 50 years, not in the short term, which is plagued with uncertainty. The entire process is clear, precise, slow and steady. It's not that character from Alice in Wonderland who's always in a hurry. “The future belongs to renewables. The technology is fast, cheap, very socially acceptable, and quick to finance, with stable prices,” sums up Rafael Mateo.

### WHITE SWAN

90% of the population will be living in big cities by 2050. They will need electricity, water, a good waste collection system, and high-quality public transportation, health, and education. “The issues are basically the same, but the solutions

must be innovative,” stresses Luis Castilla, CEO of the company's Infrastructure business.

Funding is needed: “The gap between actual investment needs and what is currently being invested amounts to some 3 trillion dollars per year worldwide,” says the CEO. “It's impossible for governments to fund the entire effort with public funds, which means private sector participation will be indispensable.” This, he says, “requires a good balance between the two sectors, working together to ensure equal distribution of risks for both sides, to attract the best talent, which is fundamental, and to further joint innovation efforts.”

ACCIONA is readying its arms. “We have the technical and technological skill, the professionals, the experience, and, most importantly, the intention of contributing to solving these problems,” concludes Castilla.

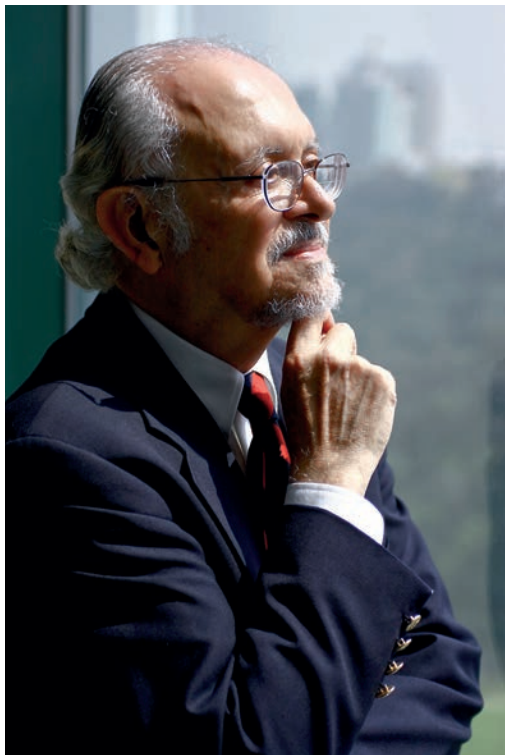
That new normal that a few politicians and experts are already pointing to will bring a whole new world. The black swan will suddenly turn white.

In 2005, ACCIONA joined the UN Global Compact. It has been carbon neutral since 2016 and has pledged to cut its emissions a further 60% by 2030.

**MARIO MOLINA**

1995 CHEMISTRY NOBEL LAUREATE

## “Covid-19 confirms the absolute priority of the climate crisis”



HE HEARS THE CLOCK TICKING. HE KNOWS THAT THE FUTURE IS A MIX OF SUN AND WIND, AND HE TRUSTS IN YOUNG PEOPLE'S ABILITY TO INSTIGATE CHANGE IN THE FACE OF THE CLIMATE EMERGENCY. MARIO MOLINA – A MEXICAN WHO WON THE NOBEL PRIZE IN CHEMISTRY FOR HIS WORK ON HOW CHLOROFUOROCARBONS (CFCS) AFFECT THE OZONE LAYER— TELLS US ABOUT THE WORLD THAT'S ON ITS WAY.

### **Is Covid-19 an opportunity to make progress with the climate emergency?**

Definitely. It confirms the absolute priority of the climate crisis. The effects of the pandemic pale in comparison.

### **How do you picture the post-crisis world?**

Let's hope we'll be able to return to normalcy, even if the vaccine takes another year or two. The problem, or one of them, is that this return has had economic implications. But the way forward is to capitalize on all of these changes in order to take specific measures to put an end to emissions of CO<sub>2</sub> and other greenhouse gases released in fossil fuel combustion. Emissions will peak at the end of this decade, but from then on, they will gradually fall. The virus has caused some delays in the reduction of these fuels.

### **Are cheap hydrocarbons a tempting option?**

Many countries are already starting to electrify transportation to reduce fossil fuel-based energy consumption. We have to use substitute technologies. Otherwise, it will end up costing us far more.

### **During the confinement, people were told in no uncertain terms what was expected of them, but what should we expect from companies?**

Companies need to collaborate. Many of them have a very clear notion of their social responsibility, and we've seen their plans to stop using fossil fuels. And that's very important. Scientists, economists, entrepreneurs... we know the risks we're taking. An agreement has been reached: the Paris Agreement.

But it's not enough. Businesses can play a vital role by supporting these indispensable reforms. Many companies are already doing so. Others, certain oil companies, are offering resistance. But the change is irreversible.

### **What role do politicians have in this cooperative effort?**

Science must walk the same path as politicians and economists. And that's where we can begin to work together, particularly from an ethics-based perspective, to ensure that future generations have a quality of life very similar to our own. The main concern is no longer the future, however, but the present. Fires, floods, extreme weather phenomena, droughts. This is already happening, and we have to support science.

### **Do scientists obtain social recognition?**

We all have our own responsibilities. That includes scientists. And it's something that wasn't really taken into account last century. Now we have a duty to tell society what is happening, and what could happen if we continue on this path without taking appropriate measures. That social responsibility is very important in this day and age.

### **The pandemic has ravaged the elderly population. You are 77 years old and you were confined to your home...**

It's a terrible and very significant loss. Life expectancy has doubled in the past century, and now there are some very capable older people who contribute experience, lessons, wisdom. There were people who were very productive for society, and we've lost them.

### **Are we heading into a better world?**

I'm an optimist. I have particular faith in young people. They are taking an increasingly active role in driving all of these changes that society needs. And that's a very important step. They are essential in order to achieve the transformations we need.



THE PLANET'S FUTURE RESIDES IN THAT OLD, OUTDATED APARTMENT BUILDING. RETROFITTING EXISTING CONSTRUCTIONS FOR ENERGY EFFICIENCY BREATHES NEW LIFE INTO PROPERTIES, THE CITY, THE ECONOMY... MILLIONS OF BUILDINGS LIE IN WAIT.

by **Miguel Ángel Bargueño**





The old Zaragoza Seminary, transformed by ACCIONA into a city council administrative building.



# NEW MOBILITY, NEW USES, NEW SERVICES, NEW ENERGY, A DIFFERENT MINDSET... WHAT ISN'T NEW IN CITIES?

Their old, or not so old, buildings. The ones without which those cities just wouldn't be the same. And neither would their air, as these buildings are responsible for one-third of greenhouse gas emissions. The solution: retrofitting that can meet new social and administrative demands, provided there is pre-existing awareness and resources available to pave the way.

In the magazine *Sustainable Cities and Society*, Portuguese engineer Cláudia Peres Almeida, from the University of Coimbra, said: "It is essential for society to understand the importance of sustainable development, the role it plays in standards of living, and the need for management policies that foster it. Rehabilitation is a key element in this process."

Over 70% of Europeans live in urban areas, and roughly 85% of the European Union's GDP is generated in cities. The digital transformation,

smart communities, and ensuring cities are climate neutral by 2050 are top priorities for the EU. But how many obsolete constructions must be rehabilitated to achieve these goals? In Spain, 55% of residential buildings are over 40 years old. Just 30% have designs that are conducive to energy efficiency.

## 150,000 PER YEAR

"We need to rehabilitate at least 150,000 homes per year to achieve the 2030 Agenda's sustainable development goals," says Alberto Royo, Head of Business Development for Spain and Portugal in ACCIONA's Construction division. Despite this, some 334,000 rehabilitations were recorded between 2013 and 2017. The post-Covid reality reminds us of the need for smarter, healthier urban areas: "The lockdown revealed some serious residential shortcomings in a large portion of our housing stock," says Celestino García Braña, spokesman for the Higher Council of Architects of Spain (CSCAE).

Europe has set to work on this problem, with an average of 40% of construction activity focused on restoration and rehabilitation. In Spain, however, the average is just half that number. The aim, according to Carolina Ferrandis, Head of the Sustainable Development and Consultancy Department in ACCIONA's Engineering division, is to implement "energy efficiency measures and increase the use of renewable energy." These are two key elements of the smart city.

To achieve this, we must cement four basic pillars: social awareness, administrative engage-



ment, public-private collaboration, and sustainable financing. According to Ferrandis, “the banking sector is calling for changes to Spain’s Condominium Property Act, which governs homeowner associations, to make it easier for an entire building rather than each individual home to obtain financing to carry out renovations and energy-efficiency work.”

## NEW REGULATIONS

This injection should take shape in appropriate legislative reform. A long-term credit facility of between 20 and 25 years is envisioned, with the building as collateral to ensure that the debt is taken on not by the individual owners, but by the building itself. Developing low-energy buildings requires market demand that insists on transparent information about building features and places value on their energy efficiency as a key factor in their heritage value.

Rehabilitation of the National Archeological Museum (NAM) in Madrid, one of ACCIONA's most iconic projects.

## WEDISTRICT PROJECT

ACCIONA has been selected by the European Commission to lead this project. It will design, integrate and demonstrate 100% renewable technology and advanced management in:

- Alcalá de Henares (Spain). Pilot 1.25 MW plant, concentrated solar power panels, salt storage, biomass boiler and solar air-conditioning technology. It will supply heating and cooling to CEPSA's Technology Center.
- Bucharest (Romania). Geothermal and solar technology (photovoltaic and hybrid) to supply 80 kW to one of the Polytechnic University's buildings.
- Luleå (Sweden). 30 kW fuel cell powered by hydrogen or biogas to generate heating and electricity through recovery of the residual heat in a data processing center.





Interior and exterior of Casón del Buen Retiro (Madrid), after its rehabilitation by ACCIONA. To the right, reinforcement of a roof for a rehabilitation project in Madrid.

“We must move past the strategy of rehabilitating building by building,” explains Celestino García Braña, “and broaden the scale of our intervention to make housing renewal feasible, enable swapping strategies and distributive changes, and attain green areas and meters built for modern equipment. It isn’t about just replacing façades, but rather comprehensive renovation with architectural aspirations as the overarching goal.”

ACCIONA plans its energy retrofit projects based on this comprehensive sustainable vision, calculating all greenhouse gases involved in planning and construction and coordinating efforts between all of the businesses that play a part in the process: Energy, Infrastructure, Construction, etc. “Residential rehabilitation must include local production of renewable electricity and smart consumption management, as well as connecting buildings to district heating and cooling systems,” says Ferrandis.

## RECO2ST

The company is part of the ReCO2ST project, which coordinates the rehabilitation of residential buildings with varying characteristics in different climates, in London, Vevey (Switzerland), Frederikshavn (Denmark) and Cadiz. “The aim is to achieve nearly zero-energy consumption with the desired indoor environmental quality conditions,” says Rafael Sánchez Villardón, who



## HISTORY GETS A NEW LIFE

It's a palace, and a coworking space. It was a convent, now it's a cultural center. They are part of our heritage, our emotional landscape, our essence. They must be rehabilitated. But they must remain essentially untouched. This requires in-depth research of their history, their evolution, their condition.... “In contrast to a new construction project, it's fundamental to conduct exhaustive surveys, both on a geometric level and to identify construction materials and solutions. The original documents aren't always available in historic archives or city halls,” explains Jordi Miró, who owns a consulting

firm that specializes in sustainable architecture. It involves painstaking work to respect every single stone, in compliance with legislation which is, as it should be, very strict. Future risks and delays associated with permits and licenses also need to be anticipated, and energy efficiency and cost-effectiveness must be ensured. Historic building projects carried out by ACCIONA: rehabilitation of the National Archeological Museum (NAM), replacement of the roof of the Prado Museum, Casón del Buen Retiro (all in Madrid), the Zaragoza Seminary, and the Sabatini building and Madre de Dios Convent in Toledo.



represents ACCIONA in the project. In Vevey, for example, it reduced total energy consumption (heating and domestic hot water) by 60%, CO<sub>2</sub> emissions by 90%, and non-renewable primary energy consumption by as much as 87%.

“Residential rehabilitation generates new construction jobs that require more advanced worker qualifications. It creates new types of business, infrastructure, and services. It increases energy self-sufficiency and independence, which improves the energy intensity of the country’s economy. It also prevents instances of energy poverty in society’s most vulnerable segments and, by making use of existing buildings, it doesn’t encourage land occupation and it reduces resource consumption,” says Ferrandis. ■



### **ANA SÁNCHEZ-OSTIZ GUTIÉRREZ**

Architecture professor and coordinator of the Master's in Environmental Design at the University of Navarra.

## **“Every economic crisis has fostered rehabilitation”**

Making old buildings sustainable is of pressing importance. “All buildings built before 1980 have very low-quality thermal enclosures and it requires an enormous amount of energy to heat and air condition them. We must take swift action on the entire stock of existing buildings,” argues Ana Sánchez-Ostiz. The past has left us a legacy of imposing, historic architectural milestones, but it has also left the shortcomings of traumatic eras. One example is the large number of low-quality homes that were built after the Spanish Civil War, from the 1940s on, when quantity was the most important factor. “Rehabilitating them doesn’t pose a problem,” says the professor. “They can be classified into different categories and systems can be standardized. The rehabilitation of heritage buildings, however, is subject to restrictions that forbid any alteration to their esthetic appearance. Projects can’t be standardized and the best heritage and environmental solution must be sought. That is more expensive, and public aid is essential.”

This challenge represents an opportunity. “Every economic crisis since the oil crisis of the 1970s has fostered rehabilitation. Investment in new construction has ground to a halt, but there is an attempt to maintain investment in rehabilitation, and today it offers real estate market potential because we have a lot of existing buildings and aid is available. Everyone wins. The effect is very positive.” Are specialized professionals necessary to make the most of this opportunity? “It’s incredibly important, in order to know what systems are the most efficient, to determine and quantify the improvements introduced by these measures with respect to energy and to water consumption, to choose materials with a lower impact on human and environmental health, and to optimize consumption to reduce the use of natural resources and lessen waste.”



# ENERGY ON THE

THE FIRST GRID-CONNECTED  
FLOATING PV PLANT, A NEW  
(AND MORE EFFICIENT) WAY  
OF GENERATING POWER ON  
BODIES OF WATER.

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by  
**Ángel Luis Sucasas**



# WATER'S SURFACE





The Sierra Brava reservoir, near Zorita, Cáceres, is Spain's third-largest wetland, preceded only by Doñana and the Ebro Delta. It's an ornithological paradise and it's also an experimental energy lab: it's here that the country's first floating grid-connected PV plant has been launched.

This ACCIONA innovation maximizes solar energy exploitation in the PV niche. Mounted on the reservoir's surface, it's reminiscent of Chile's stilt houses and occupies 12,000 square meters, or 0.07% of the reservoir's total area.

If it flourishes, we'll be asking ourselves why we didn't think of it sooner. The fact that it floats on cold water, coupled with the effect of the breeze and evaporation, improves cooling of the modules and increases their efficiency compared to land-mounted panels.

## THE IMPORTANCE OF LOCATION

Site location is one of the problems with solar energy. Competition from agricultural activities often reduces land availability, and floating plants also offer an alternative in areas with limited land space or underutilized bodies of water. The fact that they can be installed in flat places like reservoirs deals a blow to PV power's greatest enemy: shade. They reduce the evaporation of water intended for consumption or irrigation and decrease algae growth by preventing sunlight from reaching the bed of the water body, thereby improving water quality.

According to Enrique Iriarte, Director of Technological Innovation Projects for ACCIONA's Energy business, "further competitive advantages include the fact that installing them doesn't require heavy machinery or earthworks, construction materials are recyclable and compatible with water usage, and they can act as an economic stimulus for local governments and companies."

Sierra Brava ushers in an innovative form of capturing solar energy and a plan for more extensive development in Extremadura and areas with similar landscapes. In five years, it will have enabled conclusions to be drawn on the performance of floating panels. ■

One of the five sets of floating PV panels. The facility is anchored to the reservoir bed to ensure its stability.

## IN-HOUSE PREDICTIONS

The complex has a small operations, maintenance, and control center as well as a weather station to measure solar radiation, temperature, wind velocity and direction, relative humidity, atmospheric pressure, and precipitation. The plant is constantly monitored by ACCIONA's Renewable Energy Control Center (CECOER).

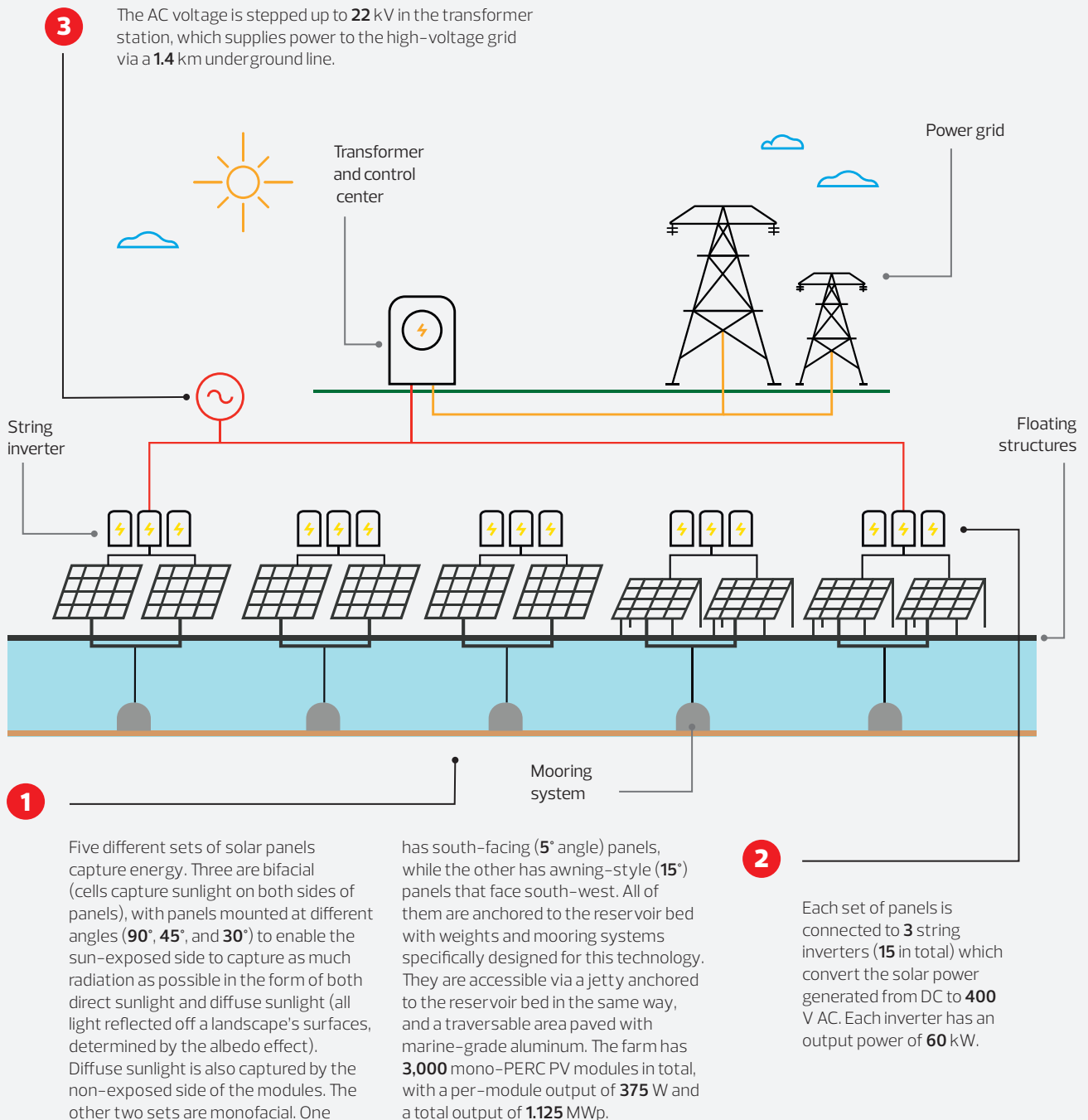
## IMPACT AND EFFICIENCY

As the plant supplies power to the grid, ACCIONA monitors parameters like the energy production and efficiency of different technologies, the environmental impact on the body of water and the local fauna, and the structural effects of mounting a solar farm on the reservoir's surface.

## NEIGHBORING SPECIES

The plant takes measures to ensure peaceful coexistence with the many birds in Sierra Brava reservoir, including signs that provide information on natural resources, marker buoys that delimit designated navigable areas, nest boxes, and floating islands to encourage nesting. Monitoring is also performed to determine how the birds are interacting with the facility.

# OVERVIEW OF A PLANT





# WARNING. DANGER:

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THEY'RE LIKE A VIRUS MADE UP OF TINY PARTICLES THAT CONTAMINATE EVERYTHING: RIVERS, OCEANS, CROPS, ANIMALS, AND HUMAN AND ENVIRONMENTAL HEALTH. ACCIONA IS PIONEERING A PROJECT TO FILTER AND REMOVE MICROPLASTICS FROM WATER.

by **Ramiro Varea**





HEY ARE SO SMALL  
IN SIZE THAT THEY  
GO UNNOTICED, BUT  
THE MAGNITUDE OF  
THEIR EFFECTS IS  
ENORMOUS.

Trillions of microplastic particles have colonized the planet's oceans and seas. These micropollutants originate from human activity and have already been detected in animals by the international scientific community, particularly in marine species, which ingest them and can die from their toxic effects.

As they aren't biodegradable (PVC or PET plastic takes one century to one millennium to decompose) and are similar in size to zooplankton, they are absorbed by a large number of living organisms: fish, sharks, birds, and mammals. Filters don't trap them; they end up in the sea, the food chain, and the human body when we ingest things like common salt, shrimp, muscles, oysters, and scallops. Microplastics have even been detected in everyday products like sugar, honey, beer... drinking water.

Urban wastewater treatment plants (UWWTPs) remove up to 90% of the water's microplastic content. They





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## INTRA-ENTREPRENEURSHIP

The project that aims to completely remove microplastics from water began as part of the company's intra-entrepreneurship program, which encourages employees to develop new business models to overcome technological challenges such as that of finding solutions to combat plastic pollution. Paula Pérez and a group of her peers proposed and advocated the idea before the program's decision-making committee. "We thought the company should get involved in fighting microplastic pollu-

tion. The Water business was an excellent testbed, and we worked for months to find a solution to the challenge; we even sought validation from potential future customers." Their efforts paid off. ACCIONA supported them by providing material and human resources to develop the pilot project. The intra-entrepreneurship model facilitates collaboration between different departments to develop projects or initiatives of which many employees were unaware, or hadn't realized the potential.

don't however, remove the smallest particles, which are also retained in sewage sludge used to fertilize agricultural land.

Fighting this problem is a top priority for the company, which has created an interdepartmental working group of professionals from businesses like Water, Services, and Energy, and is attempting to find filtering technology capable of completely removing all microplastics at its treatment plants, given their strategic location between rivers and the sewage systems that these harmful particles flow through.

The first phase of this trailblazing project is to standardize a method of analysis. It is vital to determine the size, percentage, and types of microplastics in water, as their pollution potential varies. In partnership with the University of



Oviedo, ACCIONA has already managed to develop and produce its own system to do this. This precise data can be used by engineers to seek the most effective filtering solution.

“Once these factors have been analyzed in depth, we’ll be able to work on technology that removes microplastics on site, in our treatment plants. The idea is to eliminate them from irrigation water and sludge and to comprehensively protect the water cycle so that water can be treated, returned in an excellent state and reused with no risk to human health or living organisms in general,” explains Paula Pérez, who manages Digital Transformation in ACCIONA’s Water business. ■

## ON LAND, SEA AND AIR

For the first time, a study by the Institute for Marine & Antarctic Studies detected 96 microplastic particles from 14 different types of polymer in Antarctic sea ice. Other studies indicate a dramatic accumulation in the Mediterranean basin, which is home to no less than 20% to 54% of the world’s microplastic particles. If immediate action is not taken — warns the University of British Columbia, Canada— some 12 billion tons of plastic will find its way into our oceans by 2050. And we don’t need to look as far as the middle of the century. According to the same study, a person can ingest and breathe in 70,000 to 121,000 microplastic particles in one year.

## HOW ARE THEY PRODUCED?

We produce such an enormous amount of plastic that a sizeable portion, between 2% and 5%, ends up in the oceans.

There are two types of microplastics.

Primary microplastics are directly released into the environment as small particles (for example, by washing synthetic clothing, their main source of origin). Secondary microplastics “result from the degradation of larger items, ranging from tires and fishing nets to cosmetics, clothes, industrial products and everyday waste,” explains Paula Pérez (on the right, at one of ACCIONA’s treatment plants in Madrid). It is estimated that the latter account for over 70% of the microplastic particles found in the oceans.







# COHERENCE IN CADIZ'S GARDENS

IF AN ECO-FRIENDLY VISION SHOULD BE A CONSTANT IN ANY SERVICE,  
THIS IS ESPECIALLY TRUE IN THE MAINTENANCE OF URBAN GREEN LUNGS.

by  
**Patricia Alcorta**

## BACKGROUND

The smart city. Or, in other words, the sustainable city that cares for its green spaces as a basic element of quality of life.

Cadiz is rather special in this regard. Its small size means that its residents make extensive use of its parks and gardens, which are of outstanding historical and botanical value. Examples include La Alameda Apodaca and Paseo de Carlos III promenades and Genovés Park (18th century), which

feature unique specimens and species that require special care, and the crowded Celestino Mutis and Cinco Continentes parks. It's what the *New York Times* called "a lived-in city".

## THE PROJECT

Since 2018, ACCIONA's Services business has provided Cadiz City Council with comprehensive, sustainable management —including specific emission reduction targets— of its green

ACCIONA uses a staff of 50 permanent employees to provide this service.

spaces, divided into nine sectors both inside and outside the old quarter, including the city's tree-lined promenades.

### MACHINERY

Electric tools like chainsaws, blowers, hedge trimmers and zero-emission vehicles to work in the small spaces and narrow streets of the old quarter; a quieter, non-polluting fleet of vehicles that produce less vibrations.

### TREATMENTS

To eliminate weeds and unwanted vegetation, it uses organic herbicides and weed killers in the form of organic fertilizers or hot water machines (Heatweed), a very environmentally-friendly innovation.

**Problem:** infestation by the red palm weevil, one of the most aggressive pests for the nearly one thousand Phoenix palms in the city. **Solution:** a combination of fumigation, biological pest control, and prevention via pheromone traps to attract females. Wireless sensors were installed on the trees for early detection of larvae through the sounds and vibrations they make when nibbling, which significantly reduces the need to use chemicals at a later date.

The company is committed to biological control, or the use of living organisms that are natural enemies of pests, with no risk to human or environmental health.

### MANAGEMENT

ACCIONA is developing in-house software to enable remote management of the service, cut costs, and improve operational capabilities and monitoring by technicians. It has already incorporated an inventory of plant species and will soon roll out the intervention plan, which includes incidences by type, job orders, and job sheets. It will facilitate communications between the company, workers, and the City Council, which will have access to accurate, up-to-date information that will enable it to participate in decision-making.



## PUBLIC HEALTH EMERGENCY

**The company kept the service up and running during the state of alarm. How?**

- Compliance with the guidelines of the Spanish Ministry of Health and the WHO.
- Implementation of a special pandemic protocol, including the role of Emergency Coordinator, to ensure adherence to health measures and worker protection.
- Cleaning and disinfection of vehicles and facilities (e.g., spraying carried out by a certified company) and daily delivery of protective equipment (PPE) and hygiene supplies.
- Three shifts with staggered arrivals and departures, trips made either individually or by a maximum of two employees to maintain social distancing, working remotely whenever possible.

### SOCIAL IMPACT

The company has a partnership with the EQUA Association, which works to integrate people at risk of exclusion into the community and the local economy. Through the Incorpora programme, ACCIONA fosters gardening training courses and has welcomed 11 students for internships and to cover vacation absences. ■





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