
RESPOND
COP26 Glasgow

Contents

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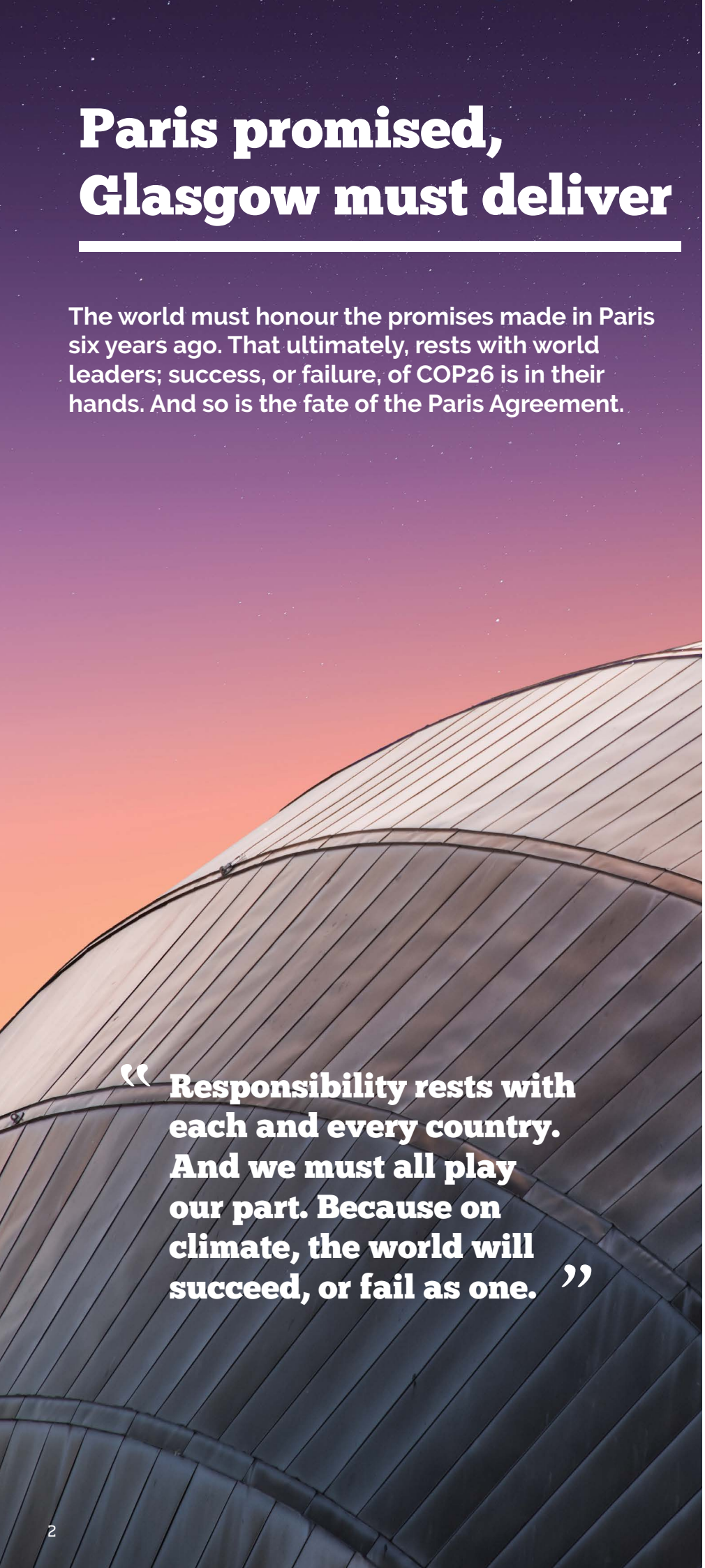
Paris promised, Glasgow must deliver

The world must honour the promises made in Paris six years ago. That ultimately, rests with world leaders; success, or failure, of COP26 is in their hands. And so is the fate of the Paris Agreement.

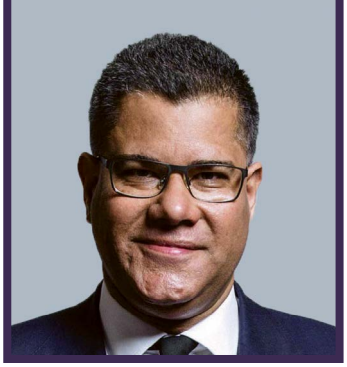


> **“Responsibility rests with each and every country. And we must all play our part. Because on climate, the world will succeed, or fail as one.”**

Since it was signed, the world has not done enough. Emissions have continued to rise and the Intergovernmental Panel on Climate Change has issued a code red for the climate, stating that unless we act immediately, the 1.5-degree limit will slip out of reach. Already temperatures have risen at least 1.1 degrees above pre-industrial levels. Extreme weather is on the march around the world: this summer we have seen devastating flooding in central Europe and China, raging wildfires in North America, record temperatures across the globe and what some have called the world’s first climate-induced famine in Madagascar.

At 1.1 degrees warming the effects are already alarming and every fraction of a degree makes a difference. At 1.5 degrees warming 700 million people would be at risk of extreme heat waves, at 2 degrees it would be 2 billion, at 1.5 degrees 70 per cent of the world’s coral reefs die, at 2 degrees they are all gone. Countries on the front-line of climate change fought hard for the 1.5 degree temperature limit to be enshrined in the Paris Agreement. For them, 1.5 to stay alive is not a hollow slogan, it is a matter of survival. And it is why I have always been clear that, in Glasgow, the world must deliver an outcome which keeps 1.5 degrees in reach. To achieve this, I have been asking countries to deliver on four key goals: emissions reductions, adaptation, finance and working together, including to make the negotiations in Glasgow a success. In all of these areas, working with partners around the world, we have made progress. But on each of them, critically, we have further to go. And leaders must deliver.

On emissions reductions, many climate vulnerable countries are leading the way. From Bhutan and Suriname which have already achieved net zero, to the small island developing state of Barbados, which will be fossil fuel free



Rt Hon Alok Sharma, MP
Cop26 President

by 2030. I have been urging countries to follow this leadership and commit to net zero by the middle of the century, and to set out ambitious plans to cut emissions by 2030, those 2030 Nationally Determined Contributions. There has been progress, when the UK took on the COP26 Presidency, less than 30 per cent of the global economy was covered by a net zero target. That figure is now 75 per cent, and climbing. In recent days Turkey and the UAE have both declared net zero targets. The UAE's an historic first in the Gulf. And I hope that others in the region will follow, ahead of COP26. More than 70 countries in total have come forward over the past two years with updated, and more ambitious, 2030 NDCs, that includes every G7 nation, all of which have NDCs aligned with net zero by 2050, and some of the world's most climate vulnerable countries. They want the same ambition, the same level of commitment, from the largest nations, the G20 countries which account for around 80 per cent of global emissions. The response of the G20 will quite simply be make, or break, for keeping 1.5 within reach.

We must also redress the balance, between finance for mitigation and finance for adaptation. We are seeing some progress. Every G7 country has committed to boost finance for adaptation. A new Champions Group on Adaptation Finance is committed to a balance in public finance, between adaptation and mitigation, we encourage more countries to join this grouping. We know that without finance, tackling climate change is well nigh impossible. So developed countries must deliver on the 100 billion dollars a year promised to developing nations.

There is no denying that the issues at any COP are complex. Passions, understandably, run high. But ultimately, success depends on us all. COP26 is not a photo op, nor a talking shop. It must be the forum where we put the world on track to deliver on climate. It is leaders who made a promise to the world in Paris six years ago, and it is leaders that must honour it. Responsibility rests with each and every country and we must all play our part. On climate, the world will succeed, or fail, as one; we are almost at the end of the road.

I am determined that the voices of young people, of indigenous people, women and civil society will be heard, as part of a truly inclusive summit. I ask global leaders to take inspiration from the passion that I have witnessed from them around the world, and the ambition and commitment I saw on display at the recent Youth4Climate event in Milan.

Now is the time to redeem ourselves. As our COP26 President's Advocate, Sir David Attenborough has said: "The moment of crisis has come… The future of humanity, and indeed all life on earth, depends on us." So let's see world leaders come together for our planet, in that 2015 spirit of hope, fraternity, and ambition. Paris promised, Glasgow must deliver.

Rt Hon Alok Sharma MP
Cop26 President

Adapted from a speech given at the UNESCO World Heritage Centre Paris, October 12 2021

Changing the tide: sustainable food from the ocean

Sophie Ryan,
CEO of the Global Salmon Initiative

Aquatic foods can play a central role in supporting healthier, more sustainable and nature positive diets. How do we help realize this potential?

> **"The ocean could supply over six times more food than it does today. This represents more than two-thirds of the edible meat that the FAO estimates will be needed to feed the future global population."**
>
> *The Future of Food from the Sea*, Report from the High-Level Panel (HLP) for a Sustainable Ocean Economy

As one of the most eco-efficient protein production sectors, and one of the most nutritious foods available – farmed fish has great potential in meeting growing demand for planetary healthy food systems. But can it live up to the promise?

With animal agriculture responsible for more greenhouse gases than all the world's transportation systems combined, the food production industry has been named as a key contributor to climate change. As populations continue to grow, and demand for food is set to double by 2050, we need to rethink current food systems to ensure they support widescale, healthy diets, and are sustainable for the planet.

The oceans cover 70% of our planet, yet only 5% is currently being used for food production. While the oceans offer huge potential, we must be conscious that The Food and Agriculture Organization (FAO) estimates that 93% of wild fisheries are already 'fully' or 'over' fished, and therefore we cannot continue to use these resources at the scale we have. Farming of fish offers an opportunity to better utilize the ocean for food production while alleviating pressure on fish stocks.

The opportunity:
Aquaculture, and specifically farmed salmon – one of the most consumed fish worldwide – can help meet the growing demand for eco-efficient, healthy foods. Responsibly farmed salmon is a nutrient-rich food that provides many health benefits to consumers; it is high in omega 3 fatty acids, minerals and vitamins, which can help reduce the risk of many cardiovascular diseases. What is lesser known is that farmed salmon is also one of the most resource-efficient animal proteins - meaning that it is highly efficient in converting feed into food for humans, minimizing the use of natural resources. The combination of its nutritional and environmental profiles mean that farmed salmon can play an important role in healthy, sustainable food systems.

However, like any food production sector the industry has faced challenges – from the use of marine ingredients in feed, to managing escapes and possible sea lice outbreaks – which need to be effectively addressed to ensure long-term responsible and sustainable operations.

And while significant progress has been made in recent years, there is still more to be done; it is important that we continue to make headway in improving our environmental performance. To support this mission, the Global Salmon Initiative (GSI) was established in 2013; representing over 40% of the global industry, we use collective problem-solving to drive sustainability improvements across the entire global industry. We believe that by collaborating on environmental improvements, we can deliver significant change, at speed and scale, to address the challenges our food system is facing.

In the eight years since its conception, the GSI has demonstrated measurable and tangible progress in improving the sustainability profile of the sector including:

- 60%[1] of GSI members farmed salmon production is Aquaculture Stewardship

1 Figure as of end of 2020

Role of salmon farming as a climate-friendly food

Studies show that aquaculture supports climate-friendly diets because it:

Requires **less fresh water**

Utilizes **fewer crops** and **less land**

Has a **lower carbon footprint**

> **"GSI was a game-changer when it launched, but we never anticipated the level of impact it would have, not only on salmon farming, but on the food sector as a whole."**
>
> Jason Clay, SVP of Market Transformation, World Wildlife Fund (WWF)

Council certified (meaning over 600,000 tonnes of responsible farmed salmon for consumers)

- Launch the first independently audited annual industry-wide Sustainability Report in the food sector
- Supported the reduced reliance on marine ingredients in feed, and supported a shift to novel sustainable ingredients and use of sustainable fishery by-products
- Supported the development and distribution of global best-practices for fish health and welfare
- Promoting leadership in innovation in farming practices – included high-tech farming and traceability
- Initiated a project with the World Wildlife Fund to measure and mitigate greenhouse gas emissions

Through the work we do as the GSI, we strive to act as a collective sector in not only addressing current challenges, but in looking to the future to pre-empt what may come, and using our collective knowledge to better structure a responsible industry, which can continue to provide healthy and sustainable food.

The recent HLPE reports highlight that aquaculture can and will play an important role in future food systems, but it is up to us to ensure the responsible growth of the industry to meet this. The private sector can, and should, take a leading role in achieving this; by setting ambitious targets, committing to greater transparency, and combining their expertise and experiences to problem-solve and identify innovative ways to improve at speed and at scale. The GSI is a work-in-progress of how this can be achieved. By working proactively and collaboratively, our goal is to further minimize the impact of aquaculture on the environment and support a healthy food system for both people and planet.

What is the GSI?

The Global Salmon Initiative is a leadership initiative established by members of the global farmed salmon industry, who are united by the mission to improve the industry's environmental and social performance. Representing approximately 40% of the global farmed salmon sector, we recognize our ability – and our responsibility – to drive positive change at scale, and are committed to seeking and supporting advancements in aquaculture that drive healthy, sustainable food systems.

www.globalsalmoninitiative.org
@GSI_Salmon

Energy transition and renewables: the future of the energy matrix

www.spicbrasil.com.br

Adriana Waltrick, CEO, SPIC Brasil

In face of the major climate-change challenges of recent years, as a company in the energy sector, SPIC deems its activities to be of vital importance for enabling countries to achieve sustainability goals to which they have pledged. Foremost among these are consolidation of the transition toward clean energy sources and enhanced harnessing of available natural resources to achieve operational efficiency goals better aligned with sustainability requirements.

To achieve carbon-emission reduction targets by 2050 it will be necessary to invest in technology and innovation, and to pursue energy transition and decarbonisation while, at the same time, ensuring ample availability and access to energy.

To meet the challenges of this scenario, renewable energy and innovation assume vital roles in decarbonisation efforts. We envision that by 2050 the majority of energy solutions will entail direct supply, energy efficiency and/or green hydrogen.

In pursuit of sustainable energy

SPIC's activities in Brazil have consistently advanced to meet these goals, given that Brazil has an ample array of natural resources. With the aim of providing and stimulating integration of energy from innovative, sustainable and competitive power sources, SPIC Brasil has made a variety of investments in the country, including: modernisation of the São Simão Hydroelectric Plant; development of national green hydrogen; and integration of wind and solar projects. The company has fostered energy transition through an array of wind, solar and hybrid projects (more than 500 MW) developed by SPIC teams.

The SPIC portfolio in Brazil encompasses São Simão Hydroelectric Plant; Vale dos Ventos Wind Complex and Millennium Wind Farm, amounting to a total of 1,768 GW of installed capacity; and also participation in the Gás Natural Açu (GNA) Complex, powered by LPG from the pre-salt; a natural-gas fired power-generation project, through a joint venture with BP, Siemens and Prumo Logística.

In 2020, SPIC announced its Strategic Growth Plan for the next five years. This Plan reinforces its long-term commitment to growth in Brazil, with a focus on hydroelectric, renewable (solar and wind), hybrid projects (solar-wind-storage) and green hydrogen.

In addition, a Memorandum of Understanding (MOU) was signed affirming an important partnership between SPIC Brasil, Eletrobrás' Centre for Electric Power Research (CEPEL), and the State Power Institute (ISEST) to promote studies, research and innovation for the development of "Smart Energy" projects in Brazil. Smart Energy is a technology that integrates generation and cogeneration, super battery storage, air conditioning, system management, water, lighting, electric mobility, hydrogen, and energy efficiency.

In 2021, we've launched a platform of open innovation to invest and promote energy entrepreneurs with new solutions for the energy transition challenge. The programme aims to bring innovation opportunities in the company's operations and more practical and applicable results to business, with dynamic and diversified partnerships.

Renewal of power sources

Innovation will assist in fostering the processes of energy transition and decarbonisation of the energy sector and will require an integrated and

SPIC Brasil has an ample array of sustainable energy matrix solutions

multidimensional approach. Since reducing the cost of low-carbon technologies remains one of the main priorities for innovation, a set of emergent technological solutions will significantly mould decarbonisation efforts. Innovation and economies of scale help make renewable energy sources economically attractive. Special attention needs to be devoted to expansion of emergent technologies, such as green hydrogen.

To this end, SPIC has invested in research and development projects for production of green hydrogen, a renewable energy source with zero carbon emissions. For this cleanest of energy sources, the Company has launched its first pilot project and aims to proceed on a larger scale within the next two years. The project, which foresees manufacture of ammonia for fertilizers, could result in a major window of opportunity, while fulfilling one of the country's pressing needs.

Beyond Brazil

SPIC Brasil is a component of the global leader in solar, wind, hydroelectric and hydrogen that seeks to contribute decisively to addressing challenges through its portfolio of complementary synergistic power-generation technologies for ensuring energy security. The organization is present in 46 countries, has 130,000 employees and total installed capacity of 176 GW.

In 2020, the company added 25.34 GW installed to its 99 GW installed capacity of clean energy. SPIC Global's installed wind and photovoltaic reached 60 GW – a truly global leader in this industry.

Generating energy to power tomorrow and today

In the coming years, SPIC Brasil will continue investing in innovation, new technologies and fostering initiatives that enable energy transition in Brazil. Based upon this commitment, the company has partnered with the United Nations to foster new, efficient and urgent responses to climate change and global warming while also providing competitive and sustainable energy in Brazil.

By 2025, SPIC Global aims to become a renewable energy company that has increased its clean energy portfolio by 60%. Thinking further ahead, to 2035, it aims to be regarded as a worldwide competitive player in renewable energy with a participation of sustainable energy in its portfolio of 75%.

Global SPIC

- ✔ Global leader in solar, wind, hydroelectric, hydrogen and thermoelectric power.
- ✔ 98.88 GW of installed clean-energy generating capacity, representing 56.09% of its portfolio.
- ✔ In 2020, with installed wind and photovoltaic generating capacity of 60.49 GW, the company assumed first place in the world ranking.
- ✔ By 2025, the company intends to expand its clean-energy portfolio by 60%, and become a major player in the international-renewable energy sector.

Adriana Waltric is CEO of SPIC Brasil, operating the São Simão Hydroelectric Plant, two wind farms in the State of Paraíba and holds 33% of GNA, the largest natural-gas complex in Latin America. She is also a Certified Board Member of IBGC (Brazilian Governance Institute) and a Board Member of GNA I and GNA II thermoelectric plants, and CBO Group provider of offshore logistics.

What the perfect fit for the energy in Brazil looks like

To put this article in context, it's important to understand the Brazilian electricity market. Our grid is almost fully integrated across the whole country, with utility companies divided basically by state (with the exemption of a few cases where there are more than one utility company per state).

The whole grid is owned by a governmental institution, but utility companies have a public grant to operate it, in many established areas/states.

Usually, these utility companies only focus on electricity distribution in their granted areas. But sometimes they also supply energy generation to their customers. The customer has the option to buy energy from another provider, but they must buy it from the utility granted company in their area.

Ultimately, regardless of where customers purchase their electricity in Brazil, they are always charged for:
Electricity produced (kWh): sometimes paid to the utility company, sometimes to a private power plant;
Electricity distribution (kWh): always paid to the utility company;
Demand (kW): always paid to the utility company (this is for big consumers only);
Taxes: always paid to the utility company.

Another little-known topic in some countries, is *Demand*, this is the maximum electrical capacity in kW that your company/house uses in a moment. Utility companies use that value to guarantee that they will have energy available for your requirements. **Only big consumers have it in their electricity bills**.

On the subject of big consumers, demand is not the only difference between them and small consumers. It's only big customers who have the option to buy their energy from any producer, small consumers are obliged to buy it from the grid/utility company.

This division, by definition is between the **regulated** and **free market**. With the regulated market you always buy energy from the utility firm and with the free market you can buy energy from anywhere. Also, with the regulation of the Distributed Energy Generation market in 2012 even **regulated market** consumers can exchange their energy produced to the grid without having to pay for what they have generated.

Before 2012 the only way to monetize power plants was selling energy in a typical PPA model in a **free market**. This regulation brought a new energy business model in Brazil. If you are in the **regulated market** you still have no possibility to buy energy in a PPA, but you are able to lease or rent a part of a power plant and exchange the energy produced in a model of kWh credit.

Now, with the whole market opened up to supply energy and monetize power plants, either by sale (free market) or lease (regulated market), our next step is to define what kind of power plant, we have to build. In other words, in which basket we should put our eggs.

Like the old adage, put all your eggs in one basket or split them in to separate ones? We believe that you should only put all your eggs in one basket, when you are 100% sure of something. Considering those baskets as ways to produce clean energy, how can we be sure of natural fluctuations if we are totally dependent on that to generate electricity? So of course, our best option is definitely to **diversify**.

To help us with that decision we believe the most reliable and sustainable electricity production is based on these 3 pillars: **Environment**, **Financial** and **Dispatch**.

We have a lot of sun in Brazil, compared to Germany, for example, the lowest solar irradiation region in Brazil has around 1,642 kWh/m^2 compared to the highest in Germany of 1,300 kWh/m^2. Sunshine is abundant and is a very clean way to produce energy, **environmentally** and **financially** great, but with a shortcoming of **dispatch**.

Batteries can help with that short coming, but they have a low capacity for energy store. The most obvious solution is to use a huge battery bank that will inevitably compromise our **environment** and **financial** pillars.

Alexandria

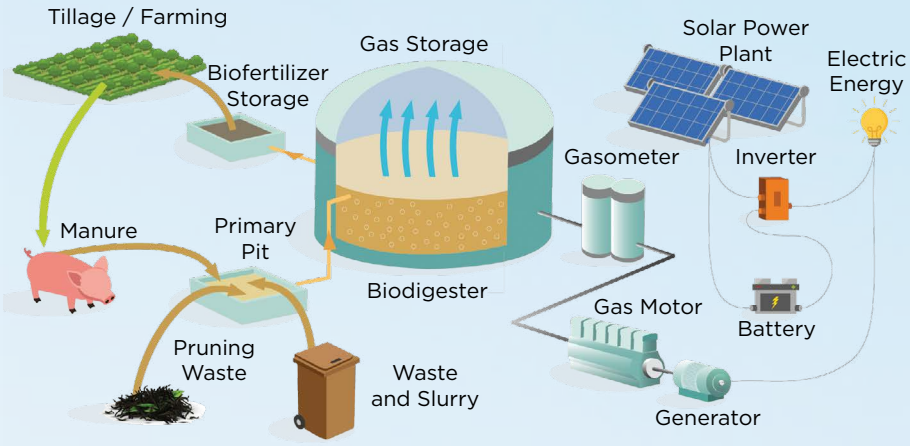
Offering solutions in renewable energy, finance and technology, so you can invest in what really matters.

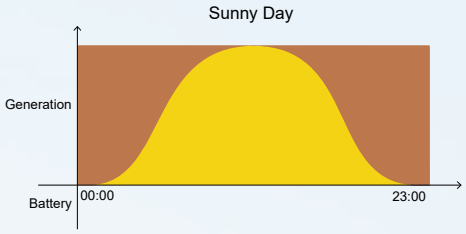
Alexandria

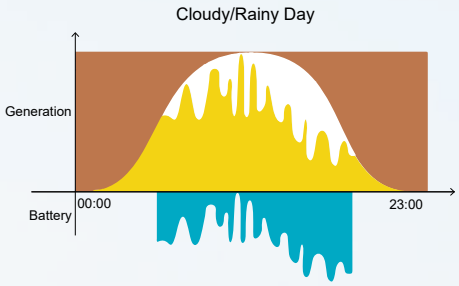
www.alexandria.solar

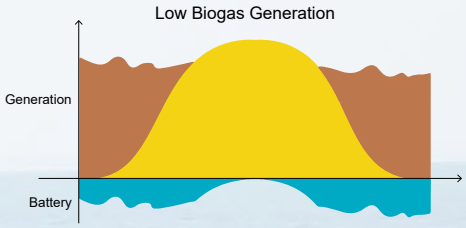
In Brazil, our farms (cattle, pigs and chicken) are full of manure, alcohol production plants are full of vinasse, a lot of organic waste and landfill. On one hand, a perfect scenario for biogas production, on the other hand we solve the environmental problem of the emissivity of that waste, but mainly we solve the problem of dispatch: biogas has a high capacity to store energy, but it unfortunately has a slow discharge time.

So batteries fit perfectly here, they have a low capacity for energy storage, but with a fast discharge time. To supply electricity quickly, in an eventual small lack of energy, either on a cloudy day or a low biogas production day, as you can see, in the charts below:









First stage of storage: Batteries, low capacity for energy store, but fast discharge time.

Second stage of storage: Biogas, high capacity for energy store, but slow discharge time.

Therefore, combining biogas, solar and batteries is the perfect fit for **environment**, **financial** and **dispatch**.

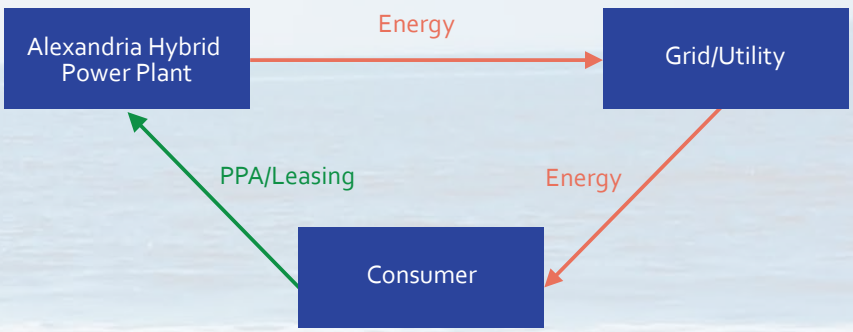
Financially we have a lot of advantages by using this system to supply energy:

1) **More energy produced:** obviously the more energy you produce, the more energy you sell/lease and the more revenue you make.

2) **Financial reliability:** you can produce energy at the time of consumer consumption demand, reducing the exposure of the consumer on the spot market, with better revenue prediction.

3) **Demand fee reduction:** for Brazilian utility companies, we have to pay a demand fee, equivalent of the capacity of the power plant, so the bigger the power plant's capacity, the more you pay. Combining biogas, with the capacity factor, your demand fee will be always lower compared to a pure solar or pure wind power plant.

4) **Timing:** you can choose to produce energy at the time it is more expensive, which consequently will increase your revenue.



The world was made to last

GrupoMalwee

www.grupomalwee.com.br

Malwee Group is one of the main fashion companies in Brazil. As a leader in ESG - Environmental, Social and Governance, we have built a path of pioneering and investments in sustainability over the past 50 years. We were pioneers in the reduction and treatment of waste, effluents and emissions. We have been following a circular economy since 2008, when we launched clothes produced with waste from plastic bottles, recycled cotton and fiber from banana waste. In 2015, we ramped up our pioneering in the Brazilian fashion sector launching the 2020 Sustainability Plan, a set of goals to be achieved in 5 years.

1. 2020 Sustainability Plan - Results

After 5 years of intense work we closed our 2020 Plan with nine goals achieved and positive performance in another six. Let´s review some of them!

Product

Measure Impact - We apply the Organizational Life Cycle Assessment (LCA-O) from cradle to gate to measure the impacts of our activities and we can highlight its reduction in all assessment areas, even with one million more pieces produced:

Additional results from environmental performance of the products:

- ✔ 91% of garments produced with less environmental impact, a performance 13% better than the defined goal.
- ✔ 24% of Malwee models with a sustainable concept, 140% more than the target established in 2015. Malwee promotes the concept of slow fashion.

The results have been achieved using less impacting raw materials and industrial processes such as recycled polyester and cotton, digital printing, use of renewable energy, water reuse in dyeing, fabrics dyed with 98% less water and the most important project, the **Malwee Lab Jeans**, which produces jeans without harmful chemicals and uses up to 98% less water.

Using chemicals, we adhere to ZDHC standards – Zero discharge of hazardous chemicals and we have ensured that 56% of chemicals meet program standards.

Suppliers

We evaluate our suppliers in environmental, social and economic aspects. Impacted by the effects of the pandemic, we were below expectations, but still with positive results. We ended 2020 with:

- ✔ 58% of suppliers, including 100% of the critical categories, evaluated.
- ✔ 61% of critical categories of suppliers audited.
- ✔ 73% of sewing service providers and Private Label suppliers certified by ABVTEX, 62% more compared to the previous year.

Industrial processes

Regarding the base year of the 2020 Plan, we made our processes more efficient in:

- ✔ **Electricity consumption** - we achieved 7% less consumption per garment, 37% in absolute terms.
- ✔ **Water** - we were 5% more efficient in water per garment and reduced water catchment from rivers by 47%.
- ✔ **Waste** - waste generation per garment was reduced by 61% and 80% less was sent to landfill.
- ✔ **We also reduced greenhouse gas emissions** from scopes 1 and 2 of the GHG Protocol by 75%, using biomass and wind power.

Consumption Use and Post Use

We invest in campaigns and actions on our social networks, stores and e-commerce encouraging conscious consumption. Supported by the quality of our products, we share ways of caring for, repairing,

Malwee Group

Malwee Group is one of the main fashion companies in Brazil. It's a pioneer in the field of sustainability and currently works to achieve the goals of its 2020 Sustainability Plan. By its performance, in 2018, it came to rank among the 10 most transparent fashion brands in the world, according to the Transparency Index of Fashion (ITM) an initiative of the Fashion Revolution. The Group has 4 manufacturing units, 5,500 employees and is present in more than 25,000 stores throughout Brazil.

customizing clothes and creating smart wardrobes. Through reverse logistics actions, the plan supports the positioning of the Group's brands, which carry the message to the consumer.

2. Malwee

Aiming to encourage conscious consumption and reinforce the concern with the environmental impact caused by the fashion industry, Malwee launched the positioning, "*Fashion without end*" (*Moda Sem Ponto Final*). The concept aims to encourage consumers to think about the useful life of clothes and the relationship between consumption and use of the items. It is a fashion:

- ✔ More conscious, with durable garments that combine the essential with the timeless with fashion information.
- ✔ Produced with a more sustainable process, in a new way of living, thinking and consuming.
- ✔ To stir up concern of what to do after using the clothes.

The brand launched the "*Good Cycle*" (*Ciclo do Bem*) campaign, which strengthens the principles of the circular economy by encouraging the sale of used clothing. In 2020, 4,000 garments were received, of which 1,817 were sold, 990 were donated and with a consumer's profit of R$76,951.49 on sales.

3. ESG 2030 Plan – a new cycle

In the last 5 years, the world has changed and the way of talking about sustainability has changed as well. The term ESG emerged, strengthening governance on the sustainability tripod. During this period, we had many achievements and now it is time to move forward and define the next goals and targets we want to achieve.

Driven by the purpose that the world was made to last and believing in cultivating lasting relationships with the business, people and the planet, our ESG Plan brings the vision that making the planet last depends on the decisions and choices we make and that business and people depend directly on what the planet offers. So, the more circular we are, the more we will strengthen our relationships and sustain life. Thus, the Malwee Group's ESG 2030 Plan has as its fundamental structures:

The Circular Economy - we see the circular economy as an urgent need for any business, so our main challenge is to be increasingly circular. We have already taken our first steps on this path, part of our water, cotton and polyester are already circular, but the challenges for circularity will be enormous for this decade.

The SDGs - we seek to act to improve our relationship with people and the planet, to heighten our awareness of this interdependence. We connect our business with the needs of humanity through world leaders and science.

The Donut Economy – we agree that a thriving economy sustains values such as health, education and equity without crossing planetary ecological limits.

Governance follows the best practices in topics such as composition of the board of directors, corporate conduct, senior management compensation, relationship with government entities and politicians, existence of a whistleblower channel, structure of audit and fiscal committees, ethics and transparency.

The social and environmental priorities were defined with the Malwee Group's stakeholders participation, who defined as environmental priorities: climate change, use of water and material resources focusing on raw materials and packaging; and as social priorities: gender equality, race and decent working conditions.

4. 2030 Challenges and Climate Change

For climate change, with a 75% reduction in greenhouse gas emissions by 2020, Malwee Group was the first Brazilian fashion company to sign the Business Ambition 1.5°C. For the next period (2019-2030) we are proposing the following goals:

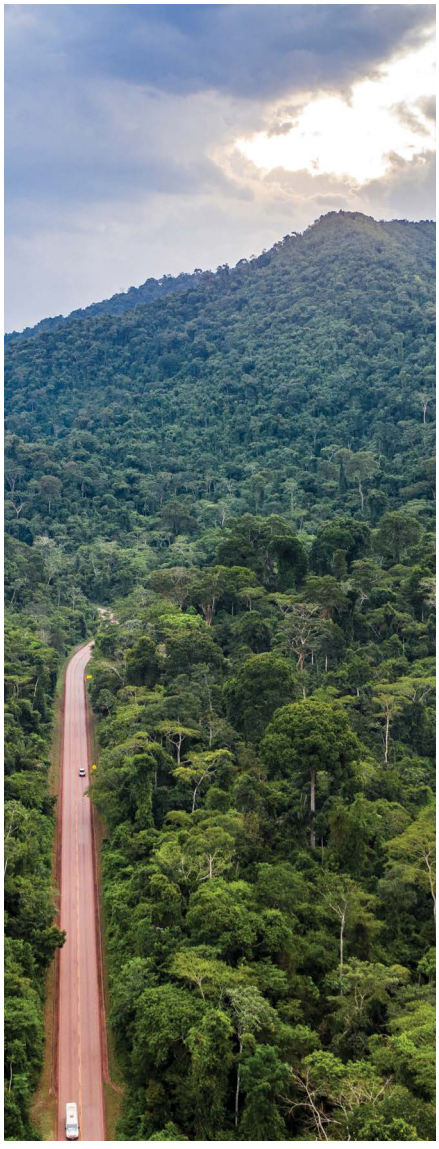
- ✔ Reduce Scope 1 and 2 greenhouse gas emissions by 50%
- ✔ Reduce greenhouse gas emissions from the purchase of materials and services for internal manufacturing by 25% per product manufactured.

The Malwee Group starts this new cycle of goals aware that more needs to be done and therefore has set ambitious goals, based on science, aiming to effectively contribute to humanity. Our history is made up of relationships that span generations; we have the same connection with our customers, partners and the planet. Everything the Malwee Group does is to last, for the good of people and the planet.

To make the world last we need to start today.

Commitment to our planet

Over the past few years, we have seen increased recognition of the urgency to address the climate challenge, it is a threat to our society, which requires decisive action from the private and the public sectors. In this context, Vale is committed to facing this challenge and turning it into an opportunity. Our ambitions are high, and our targets are bold. We have both the will and the assets to be part of the solution, reinforced by our New Pact with Society.



We are uniquely positioned to reduce our scopes 1 and 2 emissions, and on the road towards net zero.
Vale has a goal of reducing its absolute operational emissions by 33%[1] up to 2030, **aligned with the Paris Agreement** goal of limiting global average temperature rise to well below 2 degrees Celsius.

We will **invest between US$ 4-6bn up to 2030** to achieve this target, prioritizing the most cost-efficient initiatives identified by Vale's annually updated **marginal abatement cost curve (MACC)**.

We are already **industry leaders in renewable energy** to power our operations. Around 90% of our power consumption is already renewable, mostly from our hydro powerplants, and we are on track to **reach the 100% in Brazil up to 2025, and globally, by 2030. Since 2018, we have taken important steps towards our commitment by adding wind and solar sources to our matrix through long-term Power Purchase Agreements and project implementation**.

Vale has a world-class, low-carbon innovation program known as **PowerShift**, whose goal is to transform our energy matrix by moving away from fossil fuels through increased energy efficiency and renewable energy, zero-emissions technologies and new processes. Since its launch, in 2018, we have implemented pilots across all our operations, paving the way to reach our 2030 targets, once proven successful and implemented at scale. Since 2018, the share of renewables sources in Vale's energy matrix evolved to 31% from 26%.

We have a leading role in value chain decarbonization, transforming together.
Vale has **unique assets** and is well-positioned to support its clients in reducing their carbon footprint, so much that we were the **first among our peers** to set a quantitative target for scope 3.

We will **reduce net scope 3 emissions by 15% by 2035**, based on the development of new products, nature-based solutions, increased energy efficiency, alternative fuels for seaborn ore transport, and partnership and engagement with clients and suppliers.

Vale

Originally established on June 1, 1942 as state-owned Companhia Vale do Rio Doce, Vale became a private company ranking among the largest mines in the world. Our operations abroad cover approximately 30 countries that share our mission to transform natural resources into prosperity and sustainable development. In addition to mining, we work with logistics – railways, ports, terminals and state-of-the-art infrastructure, energy and steel making.

We have a **world-class portfolio** of iron ore and base metals that are critical to the world's low-carbon transition. Today, almost 90% of our iron ore products have the high-quality required for the transition. Its usage results in lower fuel consumption and thus emissions in the steelmaking process. Our Nickel and Copper products are among the lowest CO2 intensive in the industry, contributing to lower carbon emissions in its value chain, and are commonly used in high-energy battery cells. They are also critical components for the technologies and the infrastructure required for the low-carbon transition.

In this context, our product portfolio, combined with our own initiatives, will likely contribute to 15-25% of the targeted emission reduction by 2035. Some examples of initiatives we aim to scale up are energy-efficient agglomerates for direct reduction, natural gas-based HBI production and biomass-based pig iron production.

For the remaining 85-75% of scope 3 emissions reduction goal, we will lead through partnerships. We are already engaging with our most relevant clients to foster technological development and the adoption of lower carbon solutions in iron ore. The steel sector has a massive challenge in a net-zero scenario, as steel production will increase by 12% in 2050, while reducing CO2 emissions by 92% in the same period[2], according to the International Energy Agency. At the same time, over a third of the technologies needed to decarbonize it by 2050 are still at the prototype or demonstration phases[3], posing a cost challenge in addition. Together with our clients, we are monitoring the regulatory frameworks under development in different geographies, since those will be

critical in setting the pace of the transition to a lower carbon steel.

The decarbonization challenge faced by the steel industry points to the essential role of nature-base solutions in supporting companies mitigate the climate impact, and aiming to scale up voluntary carbon markets, for the scope 3 target, we consider the possibility of using high-integrity offsets (up to 20%).

As for **shipping decarbonization**, we have the very successful EcoShipping program, aligned with the International Maritime Organization targets. The program is based on a strong partnership with shipowners and a roadmap of innovative technologies, with projects on rotor sails, air lubrication, and a *Memorandum of Understanding* to assess ammonia's potential as a shipping fuel, in force since the first half of 2021.

Vale carries out sustainable mining practices coupled with forest conservation worldwide.
Vale has been in the Amazon for more than 30 years, helping to protect approximately 800 thousand hectares of rainforest. The area is five times the size of São Paulo's capital city and stores approximately 490 million tons of carbon equivalent. Over 60% of our iron ore is produced within the Amazon region, proving that mining activities and sustainable development are compatible. We generate income and thousands of jobs and engage an entire chain of local suppliers.

As stated in our September 2020's Amazon Manifesto, we are committed to (i) respecting and promoting the rights and the culture of indigenous people and traditional communities, (ii) supporting the fight against illegal mining and logging, in addition to promoting spatial planning and land regularization in consolidated areas, (iii) promoting the inclusion of forests in the carbon markets through REDD and other mechanisms, and (iv) encouraging environmental protection and restoration initiatives, highlighting the value of the rainforest, increasing carbon sequestration and stocking, and ensuring that we will continue to offer environmental stewardship services.

We believe that Vale can be a catalyst for "impact carbon" projects that generate carbon credits with significant socioenvironmental benefits.

And finally, Vale supports the Article 6 negotiations in order to foster a credible and high-integrity carbon market.
We have a long-term commitment towards **net-zero emissions by 2050**. It starts with our priority to continuously reduce our operational emissions, through innovation and technology, as previously stated.

Nevertheless, science recognizes that, as a **hard-to-abate sector, we may also rely to a limited extent on carbon offsets and removals**. We will leverage our expertise and know-how to address sound nature-based solutions. At the same time, we will count on high-quality and credible carbon markets, aligned with international best practices.

At Vale, an internal **carbon price** of US$ 50/tCO2e is already in effect to guide our capital allocation decisions aligned with the Paris Agreement goals. We believe that pricing externalities related to GHG emissions enable a faster and more efficient transition to a low-carbon economy.

That is why the definition of a **sound and robust framework for Article 6** is so important to us. We will not use any type of credits that can jeopardize the climate fight and, therefore, we need predictable rules to ensure this and to avoid reputational risks.

At Vale, we are changing how we mine to serve a changing world. The iron ore, nickel and copper we produce are critical to building a cleaner, greener and healthier future for all. But supplying these metals to the world is only part of the solution, how we supply them is even more important. And that is where the real change is happening.

We have an ambitious climate agenda, but we also have the people, the passion, and the purpose to deliver it.

1 2017 baseline
2 IEA – "Net Zero by 2050: a roadmap for the global energy system", 2021
3 IEA. "Iron and Steel Technology Roadmap: Towards more sustainable steelmaking", 2020

The sustainability challenge for data centers

Eduardo Marini, CEO, green4T

How Brazil is promoting greener technology with smart IT infrastructure management and renewable energy investments.

As society becomes increasingly connected and reliant on technology we must ask ourselves: what are the impacts of global digitalization on our environment? Will the relentless growth of the digital economy – which by certain estimates will reach 25% of global GDP by 2025[1] – contribute or undermine our goal of achieving net zero GHG emissions by mid-century?

Technology can affect – and has affected – the environment positively and negatively. On the positive side, it has been used to monitor and reduce carbon emissions, to optimize industrial processes for less energy consumption and waste, to ease and cheapen access to information, and to drive innovation in green technologies. Through technology, we can reduce the carbon footprint of our transport, food, and products.

However, on the negative side, with the rapid growth in ICT global electricity consumption has raised concerns over the past few years. Consumption linked to ICT is currently estimated between 5 to 9% of the world's total electricity demand, and with estimated growth rates ranging from 6 to 9% it is likely that such consumption will rise to over 20% by 2030, as reported in the article "On Global Electricity Usage of Communication Technology: Trends to 2030", by Anders Andrae and Tomas Edler.[2]

The logic is simple: as business and people's way of life become more digital, the greater the need for digital infrastructure: consumer and enterprise devices, communication networks, and data centers. And even though our digital machinery is becoming more energy efficient, the sheer increase of IT and telecoms equipment to support our ever-growing demand for data processing and communication has trumped energy efficiency innovation in the sector, significantly increasing global ICT's power consumption.

The concern is backed up by reality. In June 2021, Ireland's national energy agency (EirGrid) issued a warning about the risk of extended power outages if the energy expenditure of data centers is not kept under control. Having more than 70 data centers in operation, Ireland is considered the largest hub of this type of infrastructure in Europe. Electricity consumption for Ireland's data centers may leap from the current 11% to 29% of the local energy grid by 2028.[3]

The situation is likely to worsen as the digital transformation of society and businesses speeds up. Last year, due to the COVID-19 pandemic, the way we live, consume and work was completely disrupted. Switching our activities online generated a staggering 64.2 zettabytes of data this according to a report by the International Data Corporation (IDC). In five years, this number is expected to double.[4]

That's because predictions point to a meteoric rise in the use of technology and innovation in all aspects of human life. By 2023, there will be 5 billion internet users; 29.3 billion devices connected to the network; and 36.8 billion IoT sensors - the Internet of Things - in industry alone, as Forbes magazine reported in 2020.[5] Consequently, investment in the data center market is growing: it represented US$244.7 billion in 2019, according to consulting firm Research and Markets. Researchers forecast that this figure will get closer to US$ 435 billion in four years.[6]

Industry efforts to reduce the digital infrastructure carbon footprint are already a reality. A survey by consulting firm Markets and Markets indicates that the green data center market will reach US$ 140.3 billion by 2026, with steady growth of 20% per year.[7] Technology giants that work with hyperscale data processing have tested low environmental impact processing centers. To this end, they have taken data centers underwater (in Europe's freezing North Sea) and into deep caves. The goal is always to take advantage of the surrounding natural conditions to help cool the equipment using less energy.

However, the complexity of facilities such as these has made CIOs wonder if there is

another way to achieve this same planet-friendly result but with less investment and at a larger scale?

The economic impact

Before we delve into our experience in Brazil, it is important to highlight the economic rationale that has further stimulated the search for more environmentally neutral digital infrastructure. Especially in the last decade, sustainability has taken a seat on the companies' boards, with ESG (Environment, Social and Governance) standards being measured, compared and reported. Accordingly, there is also a significant escalation in concern among CEOs - as well as government officials - about mitigating their companies' greenhouse gas emissions.

When it comes to the technology sector, a KPMG survey conducted last year revealed that 79% of the companies consulted believed that the future of their business was linked to the ability of adapting to this new way of managing. And 26% of them stated that they had already adopted ESG in their management.[8]

Making business more sustainable has gained prominence not only in the IT industry. In 2020, Larry Fink, CEO of the world's largest investment fund, BlackRock, with US$8 trillion in portfolio, set sustainability as the company's new investment standard. This notorious letter from one of the world's largest money managers has influenced not only its clients, but the financial markets and business managers in general. Whether as a direct reflection or not, the forecast for 2021 is a record issuance of green bonds and sustainable bonds - something around US$ 650 billion - according to a report by American credit rating agency Moody's.[9]

Renewable sources, more profitable business

One of the most assertive and cost-effective strategies to drive immediate energy efficiency in existing data centers - and that we, at green4T, have successfully deployed for clients in Brazil and other countries in Latin America - consists in applying a multidisciplinary action plan (MAP) that can result in a reduction of up to 60 percent in energy consumption. In short summary, the MAP involves the following combined actions:

- Revision and renewal of the site's power and cooling systems, equipment and operating procedures to lower the data center PUE (Power Usage Effectiveness), driving efficiencies in the total energy consumed by the site relative to the energy consumption of the IT equipment;
- Optimization of computing density, with more servers installed per rack, making the use of physical space and energy more efficient and productive;
- Leverage server and network virtualization to maximize hardware utilization and throughput, and making use of hybrid/multicloud environments for peak processing demand;
- Comprehensive and real-time monitoring of both physical and virtual assets in a single database with a modern DCIM (data center infrastructure management) solution, with 24/7 remote and onsite technical support, to allow for data-driven energy efficiency decisions.

In our experience managing more than three hundred third-party data centers, most enterprise, hyperscale and edge data centers we encounter are far less than optimal in terms of energy efficiency than their owners are aware of or are willing to admit. Lack of comprehensive monitoring, insufficient technical expertise from IT managers to deal with energy consumption, little C-level awareness of the topic, and IT infrastructure vendors euphemisms around power usage certainly contribute to a suboptimal scenario in terms of data center energy efficiency.

In addition to sector and company-specific actions to mitigate ICT power consumption rise, the change in the energy matrix that feeds the entire chain of information technology and communications, from a

structural point of view, is a desirable goal Brazil is poised to accomplish in time.

The reason is that the country has an immense potential for generating energy from renewable sources, which allows for the development of one of the "greenest" digital infrastructure in the world through intelligent and sustainable use of our natural resources.

Already, the Brazilian energy matrix is mostly based on clean resources: 63.8% of the electricity consumed in the Brazilian territory comes from hydroelectric plants (Source: ANEEL).[10] However, there are alternatives that may further reinforce Brazil's potential in clean energy, whether because of its winds or the generous amount of sunshine that reaches the country.

According to data from ABEEólica (Brazilian Wind Energy Association), the installed capacity of wind power in Brazil reached 18 GW in 2020 - which represents 10.3% of the entire energy grid. The entity's estimate is to reach 28 GW by 2024. Currently, Brazil has more than 8,300 wind turbines and 695 wind farms in activity.[11]

In 2019, a report by the World Bank - *Going Global: Expanding Offshore Wind to Emerging Markets* - delivered another piece of good news: that the country has the wind energy potential to do much more. For example, just with offshore facilities up to 200 km off the coast, the country can produce about 1.2 thousand GW - a much larger amount than any of the other seven emerging economies evaluated.[12]

As for solar energy - considered by the International Energy Agency (IEA) as the most promising source for the next decade, with 12% growth in generation per year - Brazil registered 70% increase in solar energy generation in 2020, according to ABSOLAR (Brazilian Photovoltaic Solar Energy Association), reaching 7.5 GW last year. This volume is almost half of what was produced by Itaipu Binacional, the world's second largest hydroelectric plant owned by Brazil and Paraguay.[13] Notwithstanding the rapid growth in solar energy generation, the potential is still enormous: there are more than 30 thousand hours of sunlight per year in Brazil alone, capable of generating up to 30% of all the energy offered in the country's electrical grid with currently available photovoltaic technology. For comparison purposes, this capacity in Europe is only 10%.

Either way, with assertive tactics applied directly in the data center or with a major change in the energy matrix, it is vital that the global IT industry mobilizes and also contributes to the four priority objectives of COP26 in Glasgow (Scotland): adaptation, mitigation, financing, and collaboration.

For the ICT sector, this means that companies, hyperscalers and data center operators must play their part in adapting to this new sustainable world order by seeking to mitigate the impacts of their activities on the environment; investing in their own transformation; and collaborating with their customers and employees in this journey towards a more digital, sustainable and prosperous future, for which we all share responsibility.

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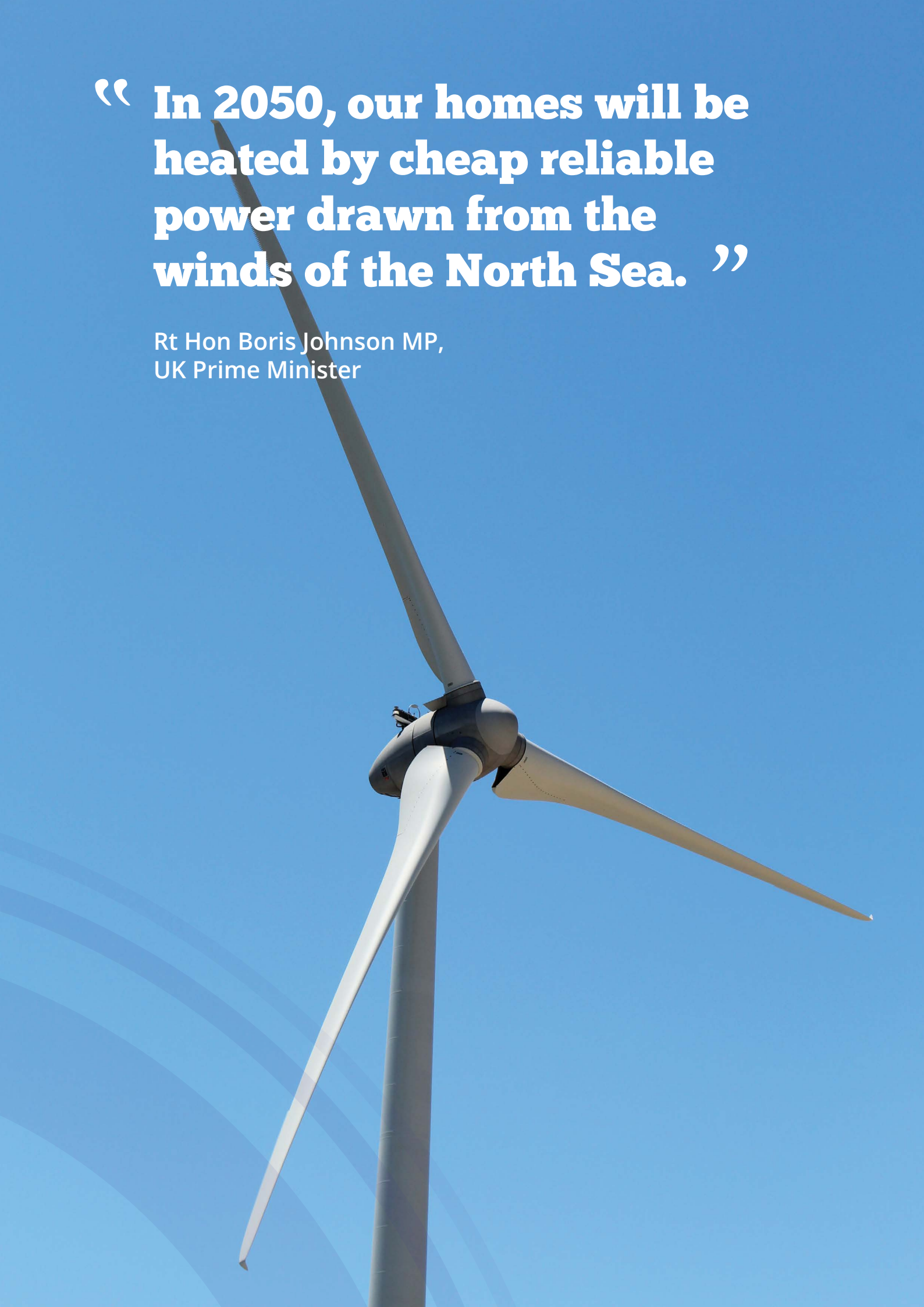
“ The ocean’s power of regeneration is remarkable – if we just offer it the chance. ”

Sir David Attenborough



> **In 2050, our homes will be heated by cheap reliable power drawn from the winds of the North Sea.**

Rt Hon Boris Johnson MP,
UK Prime Minister

Prince Sultan Bin Abdulaziz International Prize for Water

Recognizing Innovation

Winners for the 9th Award (2020)

Creativity Prize

Creativity Prize

1) The team of Dr. Benjamin S. Hsiao, including Dr. Priyanka Sharma (Stony Brook University, New York, USA)
for the development of adsorbents, coagulants and membrane materials from sustainable, biomass-sourced nanocellulose fibres a long w ith n umerous p ractical applications that promise to provide effective water purification for off-grid communities of the developing world.


Dr. Benjamin S. Hsiao


Dr. Priyanka Sharma

2) The team of Dr. Sherif El-Safty (National Institute for Materials Science, Japan)
for developing novel nano-materials in hierarchal and micrometric monoliths to achieve a nano-filtration/capture/detection process that quantitatively detects and selectively removes a wide range of water contaminants in a single step. A diverse range of these materials, which are conducive to mass-scale production, provides nano-filtration membranes and filters for water management applications, including purification, remediation, and the monitoring of hazard levels.


Dr. Sherif El-Safty

Surface Water Prize

Surface Water Prize

Dr. Zbigniew Kundzewicz (Polish Academy of Sciences, Poznan)
for advancing our understanding of the relationship between flood risk, river flow, and climate change.


Dr. Zbigniew Kundzewicz

Groundwater Prize

Groundwater Prize

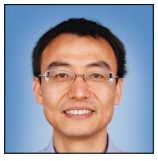
Dr. J. Jaime Gómez-Hernández (Universitat Politècnica de València, Spain)
for pioneering work on solving the "inverse problem" in hydrogeology.


Dr. J. Jaime Gómez-Hernández

Alternative Water Resources Prize

Alternative Water Resources Prize

Dr. Peng Wang (King Abdullah University of Science and Technology, Thuwal, Saudi Arabia)
for work at the forefront of solar-evaporation water production technology.


Dr. Peng Wang

Water Management and Protection Prize

Water Management & Protection Prize

Dr. Jay R. Lund (University of California Davis, USA)
for the development of the CALVIN water supply optimization model that couples traditional water-supply criteria with economic considerations.


Dr. Jay R. Lund

Nominations are open for the 10th Award. Nominations can be made online until 31 December 2021.

www.psipw.org
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Geospatial technology trends for environmental awareness

Environmental science is a multidisciplinary field that integrates biological, social and physical sciences to solve any environmental problem that the world faces on a daily basis. Scientists in the field examine and research the interaction between humans and the environment, analyzing the issues that affect the planet - and each of them has a geographical component.

Technology for conscious exploration of environmental resources

In 2020, looking to understand climate change in the state of Tocantins, Brazil, Codex started the project **Climate Charts**, creating a historical base of geospatial data through data science resources. The resulting database has a significant volume of information, as data was collected over a 30 year period, which characterizes this project as Big Data.

The popularization of Geographic Information Systems (GIS) helps government operations, generating a balance between the natural and built environment to create environmental policies. These systems are a mapping platform for governments and a tool to Environmental, Social and Governance (ESG) driven communities.

The collection, sanitization, transformation and manipulation of complex data creates the perfect environment for amazing analysis, which can answer several questions for the public administration.

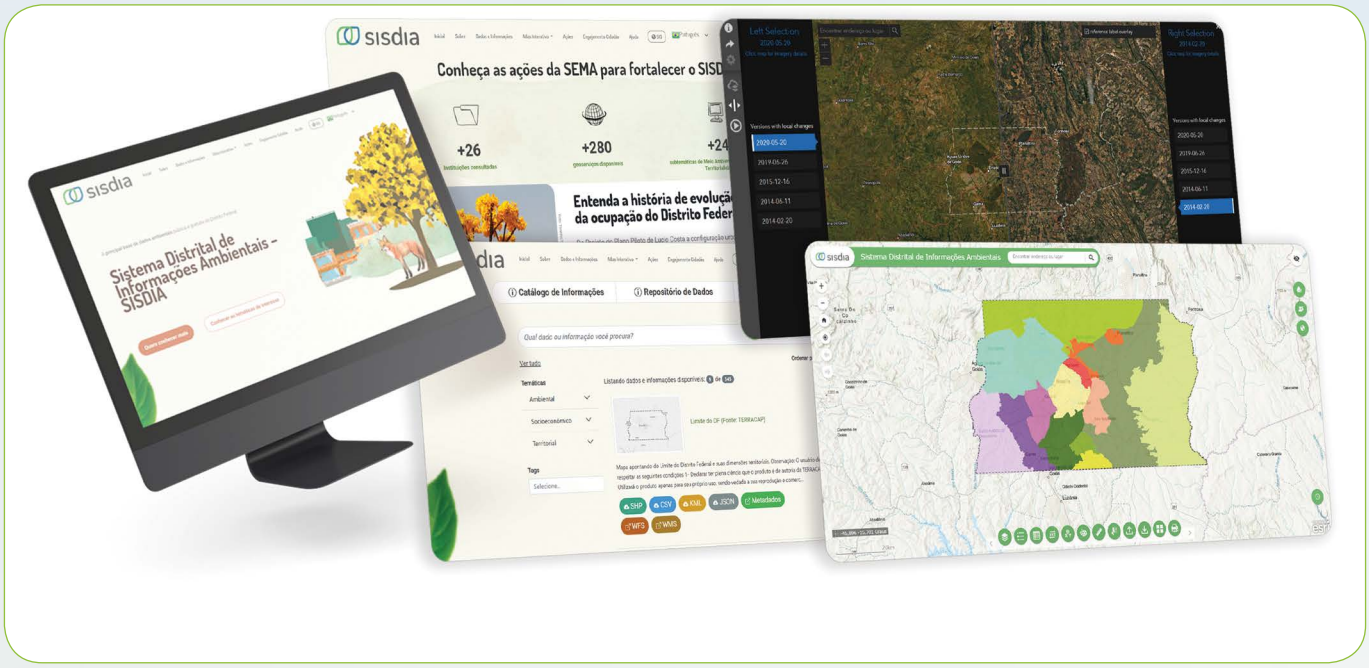
Data collection with mobile devices, the use of satellite images and remote sensing, are important technologies for public and private companies to have access to quality information and to be able to reduce their environmental impact.

From the current global scenario, it is necessary to analyze how each company can become aware and foster understanding so that natural resources are a source of positive results, and not a target for degradation and deforestation.

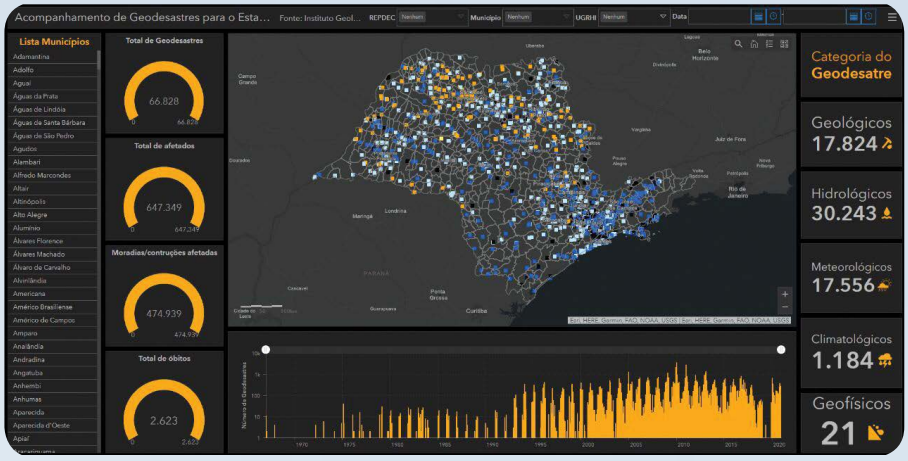
Conscious exploration of natural resources can decide the future and the positioning of companies in relation to the environment and the population. For these reasons, Codex helped in the creation of Distrital Environmental Information System (SISDIA), a platform that consists of a Spatial Data Infrastructure (SDI), a platform that enables technical analysis in decision-making by Federal, State and Local Governments.

Tools for risk monitoring and disaster prevention

Disasters are occurrences that cause negative changes in the environment, such as the destabilization of fauna and flora, displacement or risks to the survival of society. Furthermore, risks are the



www.codex.com.br



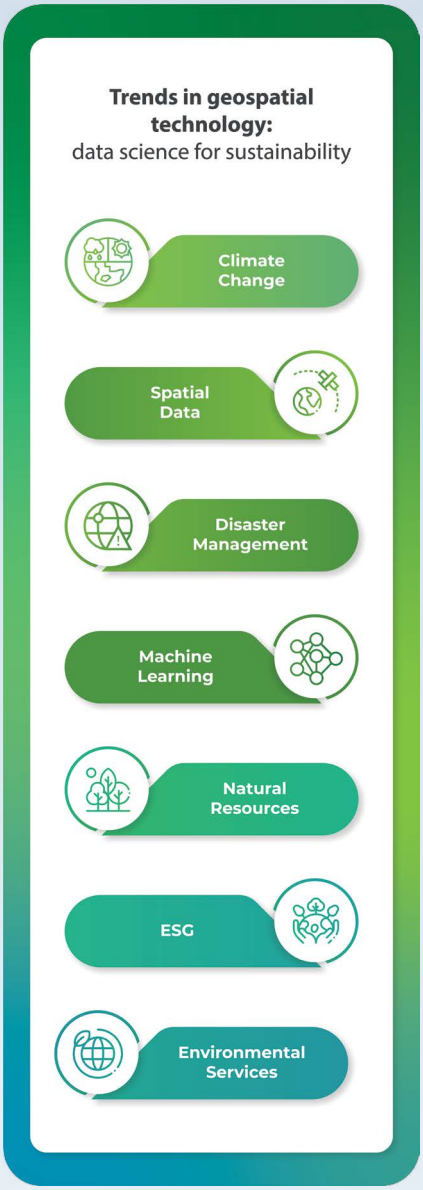
possibility of some type of incident, which are possible to monitor in advance, with the help of specific technologies.

Codex works both in mapping and recording the occurrence of natural disasters, and in viewing them on a dashboard that works 24 hours a day, seven days a week. With this service, it is possible to securely monitor everything that is happening in certain areas, from images, alerts and information panels.

In addition to keeping an organization informed and alert to such events, the technology intended for the risk and disaster sector also makes it possible to prevent the emergence of disastrous situations, or those that may cause damage to society and the environment.

SEGIRD (State Integrated System of Disaster Risk and Management) is a great example that was carried out in partnership with the Rio Grande do Sul State government. SEGIRD performs the transition from manual processes to electronic formats in a comprehensive and multidisciplinary manner, promoting the engagement of internal actors and the entire population, improving the provision of services in the event of natural disasters or those caused by human actions.

Codex is a Brazilian corporation that cares about the environment, and adheres to ESG practices, in the search for a more sustainable world. The company's innovative technologies work with the aim of reducing the impacts of numerous segments on the environment, thus providing more safety to our planet.



Codex
Codex has been working with geotechnologies since 2005. It aims to transform sustainable development with its digital technology solutions to minimize impacts on the environment. Its main projects include: climate change, ESG, spatial data, disaster management, location intelligence, data science, big data, environmental services and natural resources.

Delivering responsible value

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Paulo Mattos,
CEO of IG4 Capital and Chairman of Iguá Saneamento S.A.

ESG in action: the challenge of unleashing the trillions in private finance that are needed to achieve the NET ZERO ambition.

All over the world, the transformation of economic activity into socially and environmentally sustainable ventures is a major challenge. Today, sustainability is intimately linked to business strategy, consumer behaviour and capital deployment. Consumers now expect brands to take stands on societal issues. Younger generations are buying with an eye towards environmental and social drivers: 72% of Gen Zs consider a company's purpose when deciding what to buy[1]. This social revolution has become a focus of companies not only because of the change in their customers' behaviour, but also in the attitudes of their potential employees. According to the 2020 Edelman Trust Barometer, which measures changes in societal and cultural values, 79% of adults would consider a company's mission and purpose before applying for a job and 56% of them would consider company culture to be more important than salary when it comes to being satisfied at work[2].

In Europe, investors are increasingly demanding that companies implement social and environmental sustainability policies. A new breed of investor is redefining the parameters of the capital markets. This kind of investor is not only driven by profit, but he/she is mission-driven and seeks to shape a better world to leave behind for the next generation. In fact, ESG (environmental, social and governance) practices have long been shaping European companies, especially based on EU and UK directives, allowing for the adoption of directly related metrics to the businesses' KPIs (key performance indicators). In the United States, similar movements, although not so deep, are beginning to gain ground, especially with incentives for companies to adopt social and environmental responsibility metrics and goals. A good example is the certification of companies as "B Corporations" (bcorporation.net), with the aim of creating a balance between profit and social and environmental purpose.

However, in emerging markets, for various reasons, the transformation of companies and the adoption of ESG metrics is slower and often encounters economic and even cultural barriers. Carrying out the ESG transformation in emerging markets, but without losing sight of return on capital over time, is a major challenge albeit a huge value generation lever.

Commonly, as they are less developed and thus have high growth potential, emerging markets are seen as great investment opportunities due to the accelerated increase in their consumption of goods and services. The entry of new consumers into these markets and their increase in purchasing power over time are factors that attract investors to emerging markets.

However, although the expansion of consumption of goods and services can mean economic growth, it does not necessarily mean growth with sustainable development. On the contrary, expansionist policies based on increasing in the consumer base without structural changes in the quality of economic and social development in emerging countries can generate destructive effects.

We cannot bet on the isolated thesis of growth in emerging markets. We have to look for assets that can be valued with good ESG practices. But many of these assets may be in companies that currently do not fit into proper ESG metrics. Selecting assets for investments in emerging markets will always have the big challenge of

IG4 Capital

IG4 Capital is a specialist alternative investment asset management firm focused on generating superior performance with purpose through value creation, ESG integration and sustainable capitalism in the emerging markets. With offices in London, São Paulo, Santiago, Lima and Madrid, IG4 has approximately USD 700 million under management.

1 Source:
Edelman Trust Barometer/Porter Novelli - Cone
2 Source:
Edelman Trust Barometer/Korn Ferry/GlassDoor

Photo: © Iguá Saneamento

filtering companies with good practices from companies with bad practices from an ESG metrics standpoint. However, experience shows that most companies in emerging markets do not yet have good ESG practices.

Very few companies in emerging markets adopt ESG metrics and, most importantly, very few incorporate such metrics as performance indicators (KPIs). Even fewer still integrate these metrics into strategic planning policies and thus, the financial valuation of the company. High levels of environmental pollution ("E"), low levels of social development, social discrimination and little gender and race diversity in decision-making positions in the workplace ("S"), and high rates of corruption and lack of transparency in corporate governance of companies ("G") are, unfortunately, factors that determine the realities of emerging markets.

What to do then? Not to invest in emerging markets? Thinking about sustainable finance implies the understanding that a more sustainable planet requires a more sustainable form of global capitalism. In this sense, emerging markets cannot be left out of investments with the requirement to adopt good ESG practices.

For this to be possible, investments in emerging markets should focus not only on economic growth, but, essentially, on transforming companies based on ESG metrics. The focus should be on carrying out business turnarounds in emerging markets with the implementation of social and environmental governance in companies' performance indicators.

We cannot just depend on the growth of emerging markets, but also on our ability to identify assets that can be transformed and valued based on good ESG practices. The local market wins, consumers win, society wins and the planet wins because all can buy, use and enjoy more sustainable businesses and products. And, of course, the investor wins, because, in addition to contributing to the well-being of the impacted communities, he/she can generate a good return. Therefore, investing in emerging markets is very worthwhile, as there are a large number of businesses that can be significantly valued by serious and responsible work in implementing ESG policies. This is what we call "ESG in Action" and by through we have aligned all our portfolio companies with the Net Zero race, diversity, equality and inclusion clear targets and internationally recognized governance practices.

I can cite a practical example. The biggest investment we've made so far in emerging markets has been in the sanitation area in Brazil (Iguá Saneamento S.A.), an area in which the country has a lot of need and which, for obvious reasons, has a huge impact on people's lives as well as the environment. The "ESG in Action" transformation has enabled our sanitation company to positively impact the communities it serves, with innovative engineering projects, the use of materials and construction methods that reduce in carbon emissions, the creation of renewable energy solutions, an accelerated increase in the capacity to collect and treat sewage, the reduction of water loss with the involvement of local communities and social and environmental awareness, amongst other advances. We were also able to quickly incorporate transparency practices into the company's corporate governance and supply chain and fight corruption in the infrastructure sector in Brazil.

All of this was directly reflected in the appreciation of the assets we acquired in a short turnaround time (approximately 4 years) and in the attraction of large international funds for the long-term financing of investments, while monitoring ESG metrics as part of the company's KPIs. Recently, Iguá Saneamento was evaluated by GRESB (gresb.com) and received ESG scores comparatively above the average of sanitation companies in North America and Europe.

We cannot continue to think of investments in emerging markets in a traditional way, focusing only on generating value from growth. We need to have the purpose of providing our investors with returns, but while also transforming and valuing assets in emerging markets with ESG metrics with a broader social and environmental impact in mind.

Bosco Verticale

Vertical Forest:
sustainable residential buildings

The inspirational *Bosco Verticale* (Vertical Forest) in Milan, designed in 2014 by Stefano Boeri won numerous prestigious architecture awards, including International Highrise Award. Its 800 trees and 20,000 plants help to mitigate smog, produce oxygen, moderate interior temperatures in the winter by blocking harsh winds and create shade from the sun in summer. The plants also protect residents from noise and dust pollution from street-level traffic. It has served as the prototype for Boeri to go on and design similar buildings in Albania, Italy, France, Switzerland, The Netherlands, Egypt and China.

Photo © Ricardo Gomez-Angel, Unsplash

Photo © Victor on Unsplash

PIONEERING A SUSTAINABLE FUTURE FOR PAINTS AND COATINGS

AkzoNobel's commitment to People. Planet. Paint.

A TRACK RECORD OF SUSTAINABILITY

Sustainability is one of our core values and is integrated in everything we do. Whether it's coatings that protect against bacteria, save energy usage or transform spaces through colour, we're experts in looking beyond the surface in order to bring them to life. Sustainability is integrated in everything we do, and it's been in our DNA since 1792.

We've become a member in various associations and organizations, which align with our sustainability approach, namely, the World Green Building Council, United Nations Global Compact, Together for Sustainability, RE100, The Dutch Sustainable Growth Coalition, the Ocean CleanUp, SOS Children's Villages and more.

Our efforts have also been recognized by Sustainalytics (assessed as low risk, the best possible rating in our industry), EcoVadis (Platinum rating placing us in the top 1% of all companies studied), MSCI (AAA rating for six consecutive years), Vigeo Eiris (first in our industry), Corporate Knights Clean200 and more.

As a leader in our industry AkzoNobel is committed to playing our part in pioneering a world of possibilities to bring surfaces to life while empowering people and minimizing our impact on the planet through the launch of People. Planet. Paint. Our approach to sustainable business.

PEOPLE. PLANET. PAINT: THE KEY TO SUSTAINABILITY

People: We act with integrity and respect human rights across our operations and value chain, embracing diversity and inclusion, to transform the communities in which we operate. It's about ensuring a safe and diverse work environment, developing our talented workforce, embracing our values and our approach to human rights. AkzoNobel supports the Universal Declaration on Human Rights, the UN Guiding Principles on Business and Human Rights, and the Declaration of Fundamental Principles and Rights at Work of the International Labor Organization.

Planet: For many years, we've been working to operate in a more sustainable way, and we continue to take steps to reduce our environmental impact through reformed value chains. We focus particularly on reducing energy use, carbon emissions, VOCs and waste, while increasing our use of renewable energy and materials.
Our aim is to reduce carbon emissions in our own operations by 50% by 2030 and by 42% across the whole value chain of a 2020 baseline, reduce energy consumption by 30% by 2030, and use 100% renewable electricity by 2030. We also have an ambition to produce zero non-reusable waste and to recycle wasted water at our most water intensive sites. These ambitions are not only achievable but we're on track to get there.

Paint: Currently, AkzoNobel generates approximately 40% of our revenue from sustainable solutions, which is the highest in the industry. However, it is not enough. AkzoNobel continues to focus on innovation and pioneering new products that have a sustainability benefit. By 2030, AkzoNobel aims sustainable solutions to make up more than 50% of the company's revenue.

Today, AkzoNobel has committed to tackling climate change and helping the company's customers reduce their own carbon emissions through intelligently designed products and solutions. These include the following:

Reduction of Urban Heat Island effect:
Cities experience the "urban heat island effect", especially those cities that are subject to temperatures of 35°C and above throughout the year. This results in growing energy consumption, which is needed to cool down buildings. What many people are unaware of, however, is the fact that the materials used on exterior façades can have a significant impact on the temperature inside a building.

When infrared radiation from the sun strikes the surface of a building, some of it is reflected and some is absorbed in the form of heat. This causes the exterior wall of the building to increase in temperature, and this heat is subsequently transmitted to the interior of the building. Thanks to innovative technology and smart formulation modelling software, our researchers have developed strategies to increase the solar reflectivity of our coatings. We've carefully managed the pigments we use in our paints to create striking colours while at the same time significantly increasing the amount of infrared radiation which is reflected by building façades. The result is a difference

of up to 5˚C between a façade coated with a normal exterior paint and one coated with our Dulux Weathershield Keep Cool products. Computer simulation modelling has also demonstrated energy cost savings of up to 10-15%, depending on the type of building. And this is achieved simply as a result of less energy being required to cool the inside of the building. This type of cooling effect is available in a variety of decorative paints, coil coatings and powder coatings within the AkzoNobel portfolio.

Cleaner Air: In our work to purify the air around us, we can now use photocatalysis to trigger chemical reactions. In this process, photoactive titanium dioxide absorbs sunlight and reacts with oxygen and moisture to generate highly reactive free radicals, which in turn can contribute to the abatement of noxious emissions from motor vehicles, and decompose harmful gases like nitrogen oxide, sulphur dioxide and VOCs.

Reducing Environment Footprints: Reducing the environmental footprint of our coatings is a clear focus of our research programs. We are striving to increase the use of renewable materials and optimize our use of lower carbon footprint raw materials. Another, and perhaps less obvious, way to reduce footprint is through increasing the durability of exterior wall paints. Enabling longer maintenance and repainting cycles helps to reduce building maintenance costs and environmental impact. This is achieved by lowering the use of resources for the paint itself (which will last longer), as well as reducing water use due to less need for cleaning.

Both climate and human activities alter the appearance of building façades through UV-driven colour fading, erosion, cracking, flaking, dirt and dust pick-up, fungal and algal growth. In tropical urban environments in particular, most exterior wall paints currently last around five to eight years. We are developing solutions to extend this durability to at least ten years and beyond. Our research programs are focused on developing new polymer technologies to best balance weatherability and softness to create products with a longer durability than standard products used on building façades. In combination with durable pigments that do not fade under strong UV, and smart formulation modelling, we can deliver extended repainting cycles.

Resource Use: In addition to encouraging the use of renewable materials, AkzoNobel offers wood coatings that increase manufacturing efficiency.

Reduced Temperature Curing: Powder coating traditionally requires baking at very high temperatures to cure. Achieving those temperatures requires immense amounts of energy. However, AkzoNobel's specially engineered powder coatings can cure at much lower temperatures, reducing energy consumption significantly.

Marine Products: AkzoNobel manufactures solvent-free, VOC-compliant, universal primer designed specifically for marine environments. These are critical as international shipping relies more and more heavily on cargo ships and sea-bound trade continues to grow.

www.akzonobel.com

AkzoNobel

We've been pioneering a world of possibilities to bring surfaces to life for well over 200 years. As experts in making coatings, there's a good chance you're only ever a few meters away from one of our products. Our world class portfolio of brands – including Dulux, International, Sikkens and Interpon – is trusted by customers around the globe. We're active in more than 150 countries and have set our sights on becoming the global industry leader. It's what you'd expect from the most sustainable paints company, which has been inventing the future for more than two centuries.

About the Author:
Pamela Phua has been General Director of AkzoNobel Decorative Paints Vietnam since 2017. At the beginning of 2021, she was appointed to be Product Management Director, Decorative Paints - SESA, being instrumental in developing and maintaining a product portfolio that satisfies market demands and maximizes margins at competitive costs. In her global capacity, Pamela implements the functional and production innovation strategy for exterior wall paint. She spearheads the RD&I functional excellence, standards and capability, and the efficient delivery of processes as the approved standards and processes across the globe. Pamela's expertise and experience has been instrumental in the setting up of industry standards in Singapore. She is the President and Technical Chairperson for the Singapore Paint Industry Association and a management member in the Chemical Standards Council of Singapore.

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Lighting the way to energy efficiency

Harry Verhaar, Head of Public and Government Affairs, Signify

Like many of us, I entered the decade with a conviction that climate change would finally take its place as the hero issue on the world's political agenda. More than a year later, the outlook has changed, but the urgency is greater than ever. Governments are faced with the extraordinary task of rebuilding economies devastated by the impact of a global health crisis, while meeting emission reduction targets that are both very moderate and very challenging.

The changes we make this decade must be comprehensive and far-reaching, but we also need quick wins. Given the level of expediency now required, energy efficiency improvements are the best strategy at our disposal for a swift reduction in carbon emissions, and lighting can play a surprisingly significant part.

A renovation wave

Here in Europe, buildings account for 40% of energy consumption and 36% of energy-related greenhouse gas emissions. The European Commission's ***Renovation Wave strategy*** brings together emissions reduction and economic impact, aiming to double Europe's annual energy renovation rates in the next ten years. As our buildings become more efficient, we reduce emissions, enhance quality of life and create valuable jobs in the construction sector. If we achieve an increase in 3% energy efficiency a year, driven by a similar 3% in renovation rates and 3% increase in the use of renewables per year, then we are well on the way to achieving a carbon neutral world by 2050.

Increasing renovation rate and depth will positively impact economic growth, investments, innovation and competitiveness, and lead to a reduced reliance on fossil fuels. And economically, the impact of building renovation will most benefit the local SMEs who make up more than 90% of companies in Europe's building sector. Accelerated activity on this level creates jobs for those with displaced

www.signify.com

incomes due to the global pandemic. Indeed, every EUR 1 million spent on building renovation results in the creation of around 15 jobs.

Among the improvements we can make, lighting is one of the quickest wins. In Europe, two-thirds of installed lighting is legacy technology, with 1.3 billion conventional light points that could be switched to LED. In many cases, this is as straightforward as changing a light bulb. Through this action alone, the EU could save around EUR 40 billion and eliminate 100 million tonnes of CO_2 emissions a year. This quick, simple and low-cost intervention comes with relatively little disruption to the building's occupiers, and the payback is fast.

A smarter future

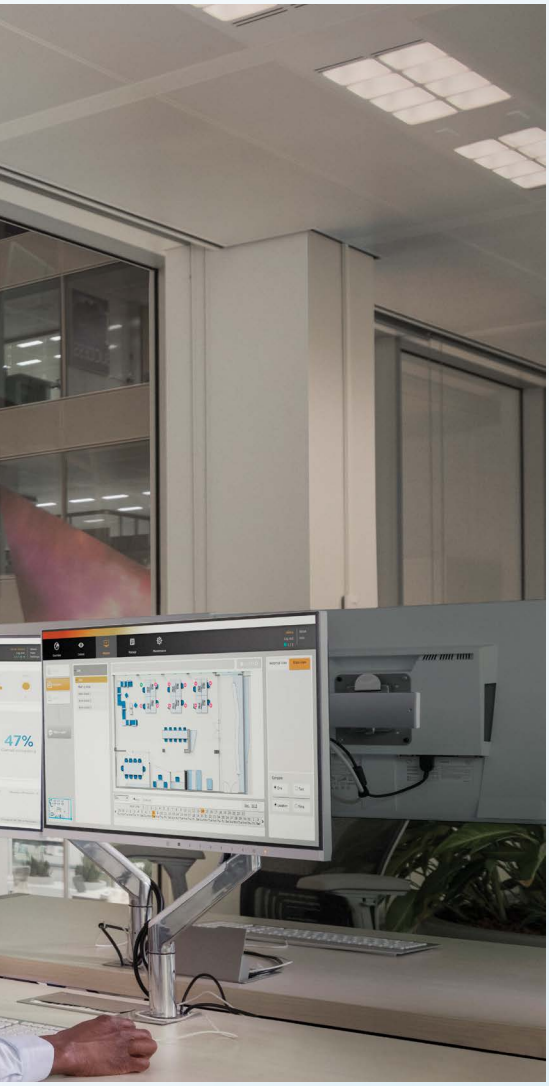
The International Energy Agency's landmark report, *'Net-zero by 2050: A Roadmap for the Global Energy Sector'*, also noted the energy-efficiency impact of lighting, recommending that sales of LED bulbs should reach 100% by 2025 in all regions of the world and that minimum energy performance standards should be complemented by the smart control of appliances.

Indeed, a switch to smart LED-based systems brings additional benefits that go beyond electricity savings and emissions reduction. Connecting lighting to other devices unlocks value beyond illumination, from sensors in a luminaire that can tell a room booking system when a room is free, to light levels in an office that workers can adjust via their smart phone. Connected lighting can create a platform for other energy-efficient technologies, improving the digital infrastructure of our built environment and bringing about positive change.

By 2050, our global transition to net-zero emissions must be complete. To get there, we need to accelerate both our energy saving and our rate of innovation. As an opportunity, building renovation, and lighting in particular, offers both of these benefits. We can enjoy its immediate payoff while setting our course towards a cleaner, brighter future.

Signify

Signify is the new company name of Philips Lighting. We are the world leader in lighting and provide our customers with high-quality, energy-efficient lighting products, systems and services. We turn light sources into points of data to connect more devices, places and people through light, contributing to a safer, more productive and smarter world.



Harry Verhaar has over 20 years of experience in the lighting industry and is Head of Global Public & Government Affairs for Signify. Responsible for the strategy, outreach and stakeholder management on energy & climate change, resource efficiency and sustainable development, with a key focus on the role of the LED lighting revolution.

Since the end of 2003 he has been focused on the lighting strategy on energy and climate change, resulting in a global momentum of phasing out old lighting technologies.

At home in the Amazon

Rebeca Ucha,
Marketing Analyst, Sparta Corporate Solutions

SPARTA
CORPORATE SOLUTIONS

www.spartasolutions.com.br

The Guardians of the Amazon need help: the indigenous groups who are putting their lives at risk to save the Amazon from destruction.

Amazonia and its people

The Amazon River Basin is home to the largest rainforest in the world. With the largest concentration of biodiversity on the planet, the majority of the Amazon rainforest (about 60%) is contained in Brazil. But, the reality of health and life in the Amazon is very different from the rest of Brazil. For indigenous people hunting, fishing and extractivism are their regular sources of food and income. In addition to indigenous people, other traditional populations in the Amazon are not so well known, namely the Quilombolas and Ribeirinhos. Sparta works with these communities at one of their headquarters, located in Belém do Pará, northern Brazil.

Indian people

Indigenous people have incomparable knowledge of fauna and flora and play a key role in biodiversity conservation. Currently, there are more than 200 indigenous groups in the Amazon, protecting and controlling their lands. Their rights are respected under national and international legislation, they have guaranteed access to health care and education that values their traditional cultures.

Indigenous people and traditional communities protect forests daily, they risk their lives to denounce illegal activities in their territories and they are fighting to defend their earned rights as the Guardians of the Amazon.

Quilombola community

Quilombos are made up of formerly enslaved men and women who fled and took refuge in the Amazon. They preserve the customs and culture of their ancestors, such as knowledge of medicinal herbs and the practice of extractivism.

Ribeirinhos community

Ribeirinhos people live near rivers where fishing is both a source of survival and income. The production of flour, collection of nuts and açaí are also highlighted in the agricultural activities of the community, which has immense knowledge of the forest fauna and flora, use of medicinal plants and sounds of the forest.

Sparta Corporate Solutions:
Consulting and Security Management

Sparta is the first company in Brazil to obtain international certifications for the ANSI/ASIS PSC.1, ISO 18788 and 9001 Management System. Sparta has developed and implemented, with continuous improvement, a set of policies and procedures following the principles and values of international Human Rights.

People in the Amazon threatened

The world's attention is focused on the Amazon mainly for negative reasons: increased deforestation, the ecological collapse of ecosystems, violence against indigenous people and traditional populations, illegal logging and government environmental management.

The Amazon represents more than 60% of the world's remaining tropical forests, with tens of millions of people depending on the services provided by the rainforest, and is home to more species of plants and animals than any other terrestrial ecosystem on the planet.

Indigenous people and traditional populations in the Amazon play a key role in reducing deforestation and are therefore not responsible for global warming. On the contrary, these populations are the ones that contribute the most to contain global climate change and suffer from the impacts of climate events.

Global warming paints a dismal future for the Amazon, with losses for both people and biodiversity. Studies suggest by the year 2050, temperatures will increase by 2 to 3 degrees celsius, and the decrease in rainfall will lead to an increase in drought, resulting in severe consequences, such as impacts on the region's forests, as well as water availability, biodiversity, agriculture and human health.

We are experiencing climate change across the planet, but few realize or understand the extent of environmental damage. Simple actions can help: invest in recycling, an efficient and ecological way of eliminating waste and not emitting greenhouse gases. It is possible to change a lot with straightforward attitudes.

Sparta Corporate Solutions guides management with its policy of extreme quality of its services following the precepts of the UN global pact, always avoiding damage to the environment, valuing the employees, partners and customers accordingly with policies for the protection of Human Rights and the environment.

Indigenous people

Ribeirinhos preparing açaí

Brazil towards climate action

Maria João Pereira Rolim, Rodrigo Sluminsky and Alice de Siqueira Khouri

ROLIM
Rolim, Viotti, Goulart, Cardoso Advogados

en.rolim.com

Brazil has a historic role in combating inequalities. Similarly in climate action, Brazil has a history of actively engaging the main agenda.

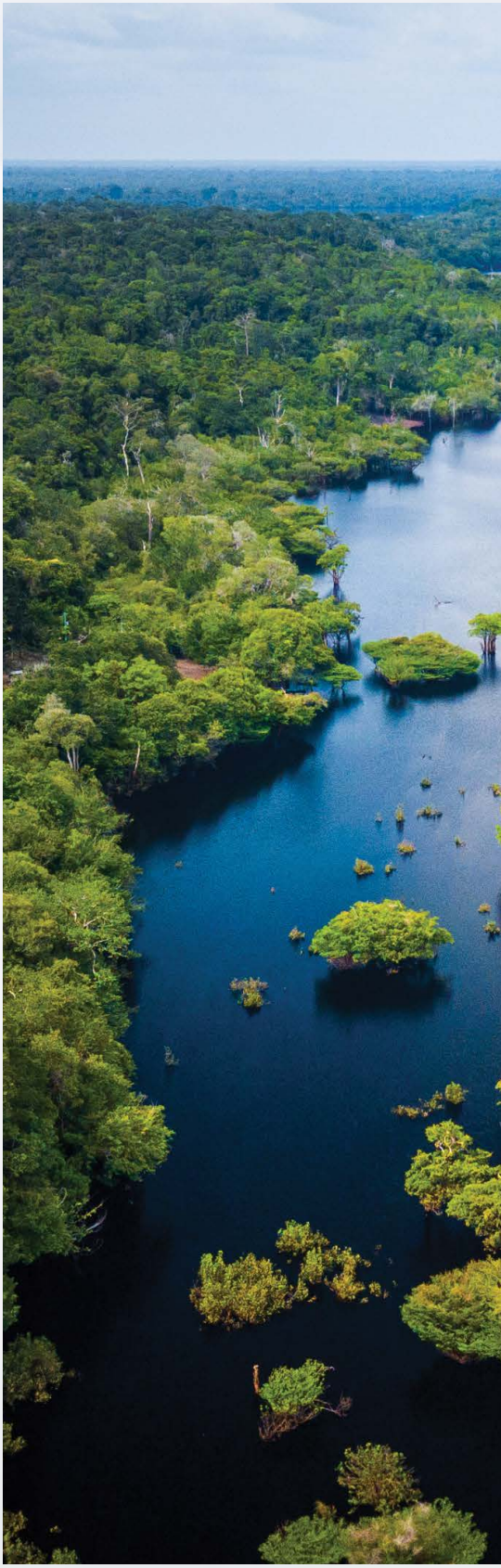
However, for the first time since the adoption of the Sustainable Development Goals, the global average SDG Index score has decreased, and Brazil is one of the countries which have declined the most[1].

Brazilians continue to face an economic recession due to political and social tensions widely reported in the international media. With approximately 2.7% of the world population, Brazil had 13% of deaths confirmed by Covid[2]. The indigenous populations have the highest risk of poor social and health outcomes[3]. Last year, the deforestation rate in the Amazon rainforest was the highest rate in the decade[4]. Deforestation can increase temperature and reduces evapotranspiration. The selective logging leads to the degradation of adjacent forests, which increases even more their vulnerability to fires[5]. The critical pattern is deforestation followed by fire, as large fires burn the remains from freshly cut areas[6]. Last year Brazil also registered the highest number of fires in recent years[7]. In addition to biodiversity loss and drought, these fires also produce air pollution that poses a severe health risk[8]. Furthermore, Brazil has more fresh water than any country in the world. About 65% of its energy comes from hydroelectric power generation sources, although the main water storage system in the South East and Midwest region is at a critical stage.

Notwithstanding, Brazil does have good news: climate action is playing an undeniable role in reversing this scenario.

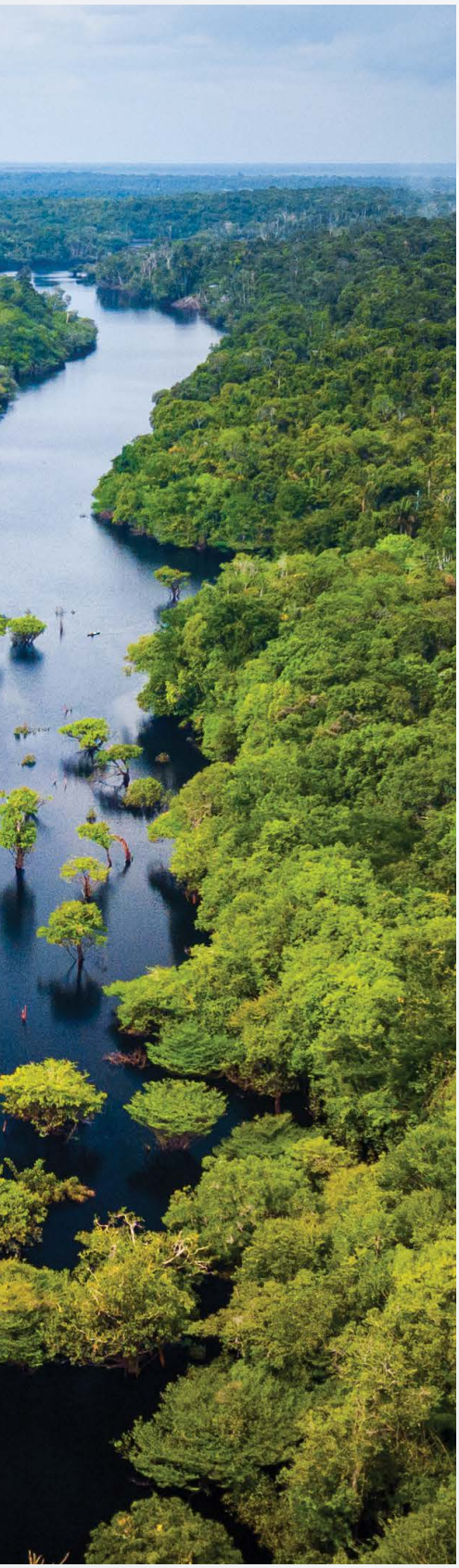
- ✔ A growing number of Brazilian companies have communicated their net-zero plans considering mainly (i) electricity purchased from renewable sources, (ii) neutralizing GHG emissions from operational activities, (iii) redefining the balance of emissions, reducing its direct and indirect emissions, or offsetting any emissions residuals; and (iv) eliminating illegal deforestation in the supply chain[9].

- ✔ Climate finance has grown exponentially in recent years in Brazil, reaching an accumulated value of USD 10.8 billion. Green bonds account for approximately 84% of the sustainable debt market, followed by sustainable bonds and social bonds[10].



Rolim

Providing legal services both in Brazil and overseas since 1993 through its four offices in Brazil and two in Europe, the law office of Rolim, Viotti, Goulart, Cardoso Advogados (Rolim) continuously reaffirms its commitment to exceed clients' expectations.



- ✔ Brazil has recently established a new classification of economic activities from a socio-environmental and climate perspective. In short, the methodology qualified credit lines for sustainable activities[11].

- ✔ Recently, the Central Bank of Brazil expressly included climate risks in a regulatory framework of risk and capital management before making them available for public comment[12].

- ✔ Most Brazilian States have climate laws. According to a recent survey, there are also committees that encourage the engagement of civil society representatives to have greater representation and transparency in climate action[13].

- ✔ The Brazilian Parliament is analyzing a specific regulation that will establish the purchase and sale of carbon credits. In addition, there are good initiatives related to climate action from land tenure and specific environmental policies to energy efficiency and new technologies.

- ✔ Finally, climate litigation is setting a pace for understanding climate change in Brazil. It is becoming an important regulatory tool in the implementation of effective measures to combat climate change. Currently, Brazil has some relevant actions that involve, above all, issues such as deforestation and non-compliance with current climate rules[14].

At a recent event in Brazil, Jeffrey Sachs stated that Brazil must once again lead the defense of sustainable development, investing resources to protect biodiversity, carbon storage and produce healthy food. These efforts are urgently needed, and there are initiatives on route to tackle climate change.

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Sustainable development in a changing world

PORTOS DO PARANÁ
PORT AUTHORITY

www.portosdoparana.pr.gov.br

The Ports of Paraná minimises the impacts from port activities, invests in environmental conservation and education within the local communities.

The Ports of Paraná are located in the middle of a very important and well protected biome, known as the Atlantic Rainforest, found in the east of the state of Paraná, bordering the Atlantic ocean. This biome has a huge natural richness and wide biodiversity that covers the most of the Brazilian coastline. This means we are inside the Mata Atlantica Biosphere Reserve, recognized by UNESCO. More specifically, the Ports of Paraná are part of the Paranaguá Estuarine Complex, one of the largest estuaries in Brazil.

Given its position in such an important habitat, and that human activities effect its surroundings, the Ports of Paraná try to minimize the most negative effects that port activities have on the environment.

The Ports of Paraná's main objective is the sustainable development of the State's coastline, to help conserve the region's biodiversity and local culture, trying to act according to the 17 ONU millennium objectives.

Among the largest ports, we are the best port in Brazil in terms of environmental performance, this title was granted by the Brazilian Waterway Transportation Agency, given in recognition of our concern and effective actions to reconcile economic development and environmental issues.

The Ports of Paraná are currently developing more than 40 environmental programmes focusing on environmental monitoring and conservation. The

Ports of Paraná

The Ports of Paraná are a port complex, composed of the ports of Paranaguá and Antonina. Strategically located in Brazil's southern region, the port terminals have the capacity to handle all types of cargo (grain, container, fluids) and can receive up to 24 ships at the same time, with static capacity of 4 million tons of grain.

programmes of the physical environment include monitoring water quality, sediments, atmospheric emissions, noise, plankton, benthos, ichthyofauna, birds, cetaceans and turtles, among others.

In addition, we are developing programmes with local communities to encourage enterprise, this includes training and workshops on permaculture and agroforestry, for example, focusing on improving the environmental quality and life of the population. As well as this, we are investing in rural infrastructure through the renovation and/or construction of small public piers in 13 island communities. In the training programmes, the Ports of Paraná have the Degraded Areas Recovery Plan of the watersheds that flow into the Paranaguá Estuarine Complex. This deals with the recovery of agricultural environments in rural areas around the bay, especially those located in areas of permanent preservation, through the use of agroforestry systems that use native plant species which are of commercial interest to the population.

With these actions, the Ports of Paraná seek not only to encourage the recovery of degraded areas, but to do so in a sustainable manner that brings biodiversity to the region and also the food sovereignty to the most vulnerable populations. They plan to accomplish these actions using food and native species that have recognised economic value. In addition, this plan aims to reduce the erosion of river banks and, consequently, the sedimentation of navigation channels, thus reducing the need for dredging events.

Considering the economic importance of the Ports of Paraná to Brazil and South America, the enterprise has projects to expand its port capacity in a sustainable way, by building new piers with modern systems that aim for greater process efficiency. As well a biodigestion power plant to produce energy for the port. Apart from economic and environmental performance, the Ports of Paraná aims at the social development of the state's coast, seeking integration and balance between communities, environment, culture and economy, throughout the entire port process.

Photo: © Claudio Neves Portos do Paraná

Photo: © Claudio Neves Portos do Paraná

From waste to resource

GENERAL WATER

How General Water is extracting value from sewage in Brazil

Brazil´s water availability is amongst the largest in the world. However, the vast majority of these resources are concentrated in the Northern region of the country, more than 3,000 kilometres away from the nation´s largest cities.

The São Paulo Metropolitan area, home to more than 21 million people, has a water availability of 130 annual cubic meters per inhabitant, according to the State´s Hydric Resources Committee[1]. This is equivalent to some of the most water stressed areas in the world, like Israel or Singapore[2]. It is also less than 10% of the water scarcity threshold of 1,700 cubic metres per person per year, according to the United Nations[3].

To make matters worse, climate change has already transformed the pattern of rainfall in most of Brazil´s largest cities and the country has been facing long periods of below average rainfall and unprecedented droughts.

The consequence? One water crisis after another.

Seeking to tackle this major problem, General Water was founded 20 years ago and has, relentlessly, been developing low carbon and environmentally friendly wastewater treatment and water recycling solutions.

As of today, General Water is responsible for treating and recycling more than 140 million litres of wastewater every month, which is the equivalent water usage of more than 32,000 people.

This translates into an enormous amount of fresh water that is saved and millions of litres of sewage being recycled, instead of being discharged into rivers or the sea.

Imagine being one of the largest shopping malls in South America, with more than 2 million visitors each month and the water consumption of a small city. Now imagine being able to reduce your drinking water intake by half and the sewage discharge by 90%, while taking up only 180 square metres of your valuable footprint. It almost seems too good to be true, but this is a real

One of General Water´s wastewater treatment plants, responsible for producing 9,000 cubic meters of recycled water each month.

General Water

Brazil's major player in water resources management services for the private and public sector, with 20 years of expertise in onsite wastewater treatment systems, water recycling systems and water treatment and supply. Currently, GW has over 140 operating contracts, with local and multinational companies within Brazil.

GW is part of the portfolio of Lightrock, a global private equity platform investing in sustainable businesses backed by the Princely House of Liechtenstein and LGT, the international private banking and asset management group.

Raw sewage in one hand, drinking quality recycled water in the other.

example of what General Water can do. This facility, located in the heart of São Paulo, one of the most densely populated areas of the world, has been fully operational since 2018.

This was only accomplished with a constant desire to innovate and with the use of the most advanced technologies available in the world, like ultrafiltration and reverse osmosis membranes. Everything is done on site, which means that we build and operate our plants in the area of our clients: industrial plants, hospitals, universities, commercial and residential complexes and shopping malls.

The water that is produced using wastewater as its input is of the highest quality possible, even surpassing Brazil´s drinking water standards. This newfound resource supplies all the non-potable uses, such as toilet flushing, into water for air conditioning systems and irrigation.

And then there is the sludge, the only by-product of the wastewater treatment. After being dewatered on site, it is transported to a facility where it is neutralized and transformed into compost, to be used as fertilizer in orange and coffee crops. By the end of 2020, more than 500 tons of sludge generated by our facilities were transformed into compost.

Extracting so many precious resources from sewage was unimaginable 15 years ago and we are proud to be part of this revolution. But we also know this is only the beginning and there is much more that needs to be done.

That´s what keeps us motivated and striving to expand our contribution even further.

www.generalwater.com.br

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2. *The World Bank - Renewable internal freshwater resources per capita (cubic meters) (https://data.worldbank.org/indicator/ER.H2O.INTR.PC)*
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