THE POSITIVE IMPACT MAGAZINE



In this issue, I enjoyed...

Sabrina Soussan Chairwoman & CEO l enjoyed seeing this spotlight on the transformation of the Uzbek water sector. It is a fine showcase of our expertise (pages 12-13<mark>)</mark>



DON'S ARCEND THE WORL

Dunkirk, the recycling channel's port of call



l enjoyed this focus on a collaborative project in the UK towards an efficient circular economy. It's a source of pride to us (pages 26-27).



6 OUR ACTIONS AROUND THE WORLD

(14) WHAT DO YOU DO, MUMMY? WHAT DO YOU DO, DADDY?

(18) POSITIVES VIBES OUR VALUES IN ACTION ²⁰ OUR PROJECTS, OUR IMPACTS

(28) TELL ME HOW? TELL ME WHY? 32 THE WORLD FROM MY WORLD







I enjoyed reading about our ability to offer solutions to key issues in the green transition, such as battery recycling (pages 22-23).





There is a part of you "IL Y A SUEZ"

At the end of last year, we deployed a communications campaign on an unprecedented scale, entitled "Il y a SUEZ" (There's SUEZ). With a dual objective, internal and external, the campaign reminded people that we provide essential services for their everyday **life.** After this first wave in France, we are sure that we hit the mark by successfully promoting our lines of business. Following on from these positive results, "There's SUEZ" will be exported to other countries in 2024.

For more than 160 years, we have been providing essential services to protect resources and improve quality of life everywhere we operate. And so we wanted to let the world know! In promoting our activities towards our customers, partners or users, we shone a light on the women and men who work at SUEZ. From waste collection to recycling, from the production of drinking water to wastewater treatment, our teams are on every front, with strong technical expertise and a sense of service. It was vital to highlight this and connect the promotion of our services with the Group's impacts and expertise.















and environmental challenges. The campaign aims to establish the Group more firmly as an expert in its domain, revolving around its two sectors of activity: waste recycling and recovery, and water management. Deployed from early November to mid-December 2023, the campaign was intentionally designed to be close to the ground. While its purpose is to increase brand awareness, it is also a powerful lever to develop our activities from a commercial perspective. Published in regional, national and specialist media titles but also displayed in the streets of more than 30 French cities, in the Paris metro or on the Group's vehicles, it was additionally deployed digitally.

activities, at plus 15%. talent in the future. So what happens next?

We highlight the women and men of SUEZ

"It y a SUEZ" creates a bridge between a global problem and an effective solution, between a collective challenge and a practical response. Each of the 13 visuals dreamt up for the campaign, supported by figures, underlines the reality of solutions provided both in France and abroad. This is a valuable illustration of the positive impact of our activities in everyday life situations, and the way they help to meet societal

Very positive results

A series of surveys were conducted to measure the impact of the campaign.

From this research, we discovered that more than two out of

three French people liked the campaign. Awareness of all our activities rose by at least 5% with a substantially improved outcome for our waste

The campaign generated 33% more visits to our website, with the page ilyasuez.com viewed by 93,000 unique visitors during its publication. By spreading the word on social media and taking selfies in front of billboard posters, our teams also played their part to contribute to these very positive

results. Thanks to this internal mobilisation, we recorded more than 22 million impressions on digital, reaching a young demographic

who were particularly receptive to our messages. This in turn can help to attract

The campaign will live on. It will be displayed on more vehicles in France, and is set to be deployed in the United Kingdom, China and Australia. Always in the interests of our development.

THE WHOLE WORLD IN OUR HANDS

Having a positive impact through our actions around the world is our driving force. We bring all of our expertise to bear different challenges.

In North America, how do we offer a sustainable solution to combat climate change through decarbonisation? Worldwide, how do we deploy our innovation policy to benefit the widest population? In Uzbekistan, how do we rise to major challenges to transform the water sector in central Asia?



With the IPCC¹ considering that the carbon neutrality targets set by the Paris Agreements can only be met through the mass sequestration of carbon dioxide², biochar is seen as a new "black gold". This biomass-based "carbon concentrate" illustrates SUEZ' desire to fight climate change through a negative emission technology offering outstanding potential. Over to Canada, where we will be mass producing this biochar

SUEZ has teamed up with Airex Energy and Groupe Rémabec to announce the creation of the first industrial biochar production plant in Port-Cartier, Canada. Owned by CARBONITY, a joint venture equally owned by the three partners, the plant will be commissioned end 2024. It will create 75 local jobs when fully operational. Its initial production capacity of 10,000 tonnes per year is set to triple by 2026, making it the largest biochar plant in North America and one of the biggest in the world.

In Canada, we're turning up the heat for a zero carbon future

The alchemists of a "new black gold"

This first plant will produce a carbon-rich biochar with high environmental qualities from the residual biomass of Groupe Rémabec's sawmill operations. The plant waste produced by the Quebec timber industry leader (which would emit greenhouse gases over time if left to rot) will be heated to temperatures between 500 and 700°C in an oxygen-free environment. This pyrolysis technique concentrates and stabilises the carbon in the biochar, preventing it from being released into the atmosphere as a result of the natural decomposition of biomass.

Considered by some to be the "new black gold," in addition to its carbon sequestration characteristics, biochar can be utilised by a number of different sectors. Thanks to its physical and chemical properties, it regenerates soil and increases its fertility by improving its aeration potential, reducing its toxicity, limiting the use of fertilizers and preserving water resources. A second example among many others. when added to concrete or asphalt formulations, biochar brings new functionalities to the final material while helping to reduce its carbon footprint, a key issue for the construction sector. Furthermore, the surplus energy generated by the high-temperature production of biochar, converted into steam, pyrolysis oil or even power, can be directly reused on site or by local industries.

"By transforming forest and agricultural residues into carbon sinks and soils amendments, SUEZ creates value over the entire life cycle of the material. Once it is stabilised in the biochar matrix, carbon becomes a key and unique vector of the circular economy," said Yves Rannou, Chief Operating Officer of Recycling & Recovery, and Executive Vice-President of SUEZ.

The huge potential of biochar

We emit 60 billion tonnes of green house gas every year- worldwide, carbon dioxide representing almost 75%. On top of reducing drastically existing GHG emissions, implementing carbon removal beyond 10 billion tonnes of CO_2 per year through NET (Negative Emission Technologies) is a mandatory goal to reach neutrality by 2050 and avoid uncontrolled instability to the climate. Given that plant photosynthesis and the oceans already absorb more than 25 billion tonnes³, biochar stands out as an effective option to keep part of this naturally captured carbon in a range estimated between one and two billion tonnes per year.

¹ Intergovernmental Panel on Climate Change
² 2 billion tonnes of CO₂ per year in 2030, then 10 billion per year in 2050 - McKinsey Sustainability, *Innovating to net zero: an executive's guide to climate technology*, October 2021
³ Brut: *Le biochar, vers une solution pour réduire nos émissions de CO₂ – 25/04/2023* ⁴ A carbon credit is created when a project reduces or eliminates carbon dioxide emissions from the atmosphere. It equates to a metric ton of CO₂, or its equivalent in other GHGs.

350,000 tonnes/year of biochar capacity installed by 2035

This unprecedented initiative in Canada is a fine example of the synergy between our commitments and our expertise, combining the CarbonFX-HT™ pyrolysis technologies developed by Airex Energy with the broad operational expertise of SUEZ, the global leader in the transformation and exploitation of organic waste, and agricultural soil amendments and organic fertilisers.

The project, financially supported by the Quebec and Canadian governments, will help sequester 75,000 tonnes of carbon dioxide per year when fully operational.

The biochar production will be supported by the issuance of guaranteed, certified carbon credits⁴ that will be sold on the voluntary market by First Climate, one of the world's leading providers of carbon management and green energy services to businesses and the public sector.

By 2035, the portfolio of plants developed by Airex Energy and SUEZ aims to produce 350,000 tonnes of biochar a year, which will lead to sequester 800,000 tonnes of CO₂ per year.

LISTEN TO THIS ARTICLE



Transformative innovations: an eye on the future

To support its innovation capabilities, SUEZ can draw on its 1,100 experts around the world and 10 centres of research and excellence. Through their work, the Group has registered 1,700 patents to accelerate the major transitions, thanks to expertise that is both long-standing and acknowledged in its sector. All cutting edge tools to develop circular water and waste solutions!

Eyes and ears in drinking water networks

In France, on average around 20% of treated water is lost before it reaches the user's meter, with a further 8% leaking after the meter.

To combat these leaks, for many years SUEZ has used people and manual processes and equipment to detect them, such as leak detectors, flow meters, acoustic sensors and remote meter reading.



But it is the advent of digital technology and artificial intelligence (AI) that really makes these tools powerful. By analysing data on a massive scale and making it easier to process, **AQUADVANCED**[®], our software suite, generates more relevant alerts and targets interventions at the right time, in the right place, making leakage control more effective without increasing the cost to the customer.

SUEZ is also able to create virtual models of networks, also known as digital twins, and thus develop the effectiveness of detection and prediction algorithms.

This approach means that ambitious targets can be set for reducing water abstraction, like in Brive, where SUEZ has made a commitment to reduce abstraction by 21%.

Zooming in on efficient waste sorting

Between 20% and 30% of waste collected is incorrectly sorted on its arrival at the sorting plant. In the aim of precisely identifying and sorting materials, SUEZ has developed **Autodiag**[®], an arch fitted with a camera, installed over the sorting table. Used to measure the quality of waste sorting in real time, this smart solution is based on algorithms that have been fed with labelled images of the different types of waste. What are the benefits? It can automatically qualify the mass purity of outgoing flows for baling and the uniformity of the different qualities of materials produced. **Autodiag**[®] is now operational for plastic waste, with a success rate of around 98.5% in detecting incorrectly sorted waste, and will soon be operational for wastepaper, cardboard and plastic film.

In energy-from-waste (EfW) plants, a quarter of the feeders had potentially recoverable materials, while 8.5% had undesirable materials that could disrupt or even damage the process. **QUALIWASTE®** is part of a programme launched by SUEZ in 2022 to exploit the potential of computer vision, algorithms and AI in the various waste management businesses. Cameras are placed in the EfW pit to film the dumping of waste trucks. After this experimental phase, the solution is able to identify 80% of the flows dumped. And the algorithms, which are fed continuously, are constantly improving.

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More than 120,000 leaks found and repaired

In 2022, more than 120,000 leaks (including 40,000 in France!) were detected and repaired along the 140,000 km of pipes managed by SUEZ worldwide – equating to 330 leaks per day! This led to 65 million cubic metres of water being saved between 2020 and 2022 on SUEZ contracts – the equivalent of the consumption of 1.2 million inhabitants, or a city like Dakar in Senegal!

Unleashing energy

To reduce the carbon footprint of its activities and those of its customers, SUEZ is working to implement innovative solutions directly at its facilities. Most of our sites, such as energy from waste plants, digesters and storage centres, can capture, store and recover CO_2 , thereby actively helping to reduce our emissions.

From summer 2024, SUEZ will also be producing a biosourced CO_2 that can be used in agriculture. This carbon, known as biogenic, is produced and purified in a waste digestion unit in addition to the biogas already produced through fermentation. Other avenues for recovery are also being explored, including the production of low-carbon molecules or products such as sustainable aviation fuels.



We're improving things step(pe) by step(pe) in Uzbekistan

March 2020 marked a milestone for SUEZ as it signed a historic contract with the Uzbek government to be its strategic partner in modernising the water supply and wastewater networks in the capital Tashkent. In November 2023, new cooperation agreements strengthened our ties with Uzbekistan. The Group aims to position its work, addressing the country's major challenges, as a model for the transformation of the water sector in Central Asia.

Eradicating the loss of 33 million m³ of water

Launched in August 2023 for a seven-year period, **the Tashkent** Water Transformation Plan (TWTP) aims to meet the needs of the Uzbek capital, which is experiencing fast population growth and rapid economic development. Led by our international and local specialists, supporting the city water company's¹ 4,000 employees, the project aims to introduce ambitious performance indicators and an action plan to improve drinking water quality and wastewater services, deploy digital tools for smart

infrastructure management, and improve customer satisfaction. This entails the implementation of innovative solutions such as AQUADVANCED® and SewerBall®. The project also includes identifying and repairing 30,000 leaks to reduce the loss of 33 million cubic metres of water a year, equating to the consumption of an Uzbek city of 330,000 inhabitants. In view of the impact of climate change, saving water will be invaluable to protect this growing city. The most populous country in Central Asia with 36.8 million inhabitants, including more than half living in rural areas, Uzbekistan has an arid profile, with two thirds of its land occupied by deserts. Faced with substantial environmental challenges including water stress, various regions are benefiting from SUEZ' expertise under the new cooperation agreements that were signed on 2 November 2023 during President Emmanuel Macron's visit to Samarkand, and in the presence of the President of the Republic of Uzbekistan, Shavkat Mirziyoyev.

Solutions in response to an expanding desert

The cooperation agreements provide for three projects in different parts of the country, **building on SUEZ' drive to contribute to local economic development with innovative and resilient solutions:** resilience that will prove decisive in an environment that is either hostile or ravaged, such as in Karakalpakstan, a region affected by the evaporation of the Aral Sea; in the desert region of Bukhara or in the mountainous province of Surxondaryo. These initiatives confirm SUEZ' position as the strategic partner of Uzbekistan for water.

SUPPLYING WATER TO INHABITANTS (Surxondaryo province)

The project in the Surxondaryo region, where only 40% of the population have access to drinking water, is key for the country whose goal is to improve access to water in these isolated areas. We are working with the authorities to raise this proportion to 80% or more, over the next 20 to 25 years.

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SUEZ

SUPPORTING RURAL SCHOOLS (Bukhara region)

We are building drinking water supply and wastewater systems in several rural schools, working with Zamin International Public Foundation, Uzsuvtaminot² and the ministry of pre-school and school education.

PROMOTING ART AND CULTURE IN AID OF THE ENVIRONMENT (Karakalpakstan region)

We are providing scientific support to the Uzbekistan Art and Culture Development Foundation to organise a regular event on the environment in this region affected by the evaporation of the Aral Sea.

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Uzbekistan Art and Culture Development Foundation

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WHAT DO YOU DO, MUMMY? WHAT DO YOU DO, DADDY?

OUR CHILDREN ARE CURIOUS, OUR JOBS ARE TOO.



Explaining your job to children is far from a simple task... And it's harder still when you're a data scientist, a manager, or a key account manager!

Whatever their profession, all our teams put their talent to use for the benefit of the environment. Issues that matter, both today and for the future. That must be worth a quick explanation!



For today My job and goal is to develop algorithms that help my colleagues achieve higher efficiency, quality and anticipation, by responding precisely to actual desired uses. Today, all sectors are affected by a huge influx of data, and when we analyse it, we can discover certain trends and patterns and prioritise solutions with real added value. This work often provides a wealth of information on SUEZ's core businesses, because the data reflects what actually happens on the ground. Processing technologies are also becoming more and more effective in meeting the needs of the various business lines, and are opening up new possibilities with images, text, sound, etc. We are working with all the data scientists to build and improve these tools, and so provide all SUEZ employees with valuable support in their work.

For tomorrow I think that a project is successful when we rely on the ability of our teams to work together and communicate with each other, and when we stay in tune with how things are done on the ground and our customers' needs. Our ability to understand our different activities will help us become more efficient and make all the difference in adding value to our customers.

GUILLAUME Data Scientist^{*} in France WHAT DO YOU DO, MUMMY, WITH OUR WASTE?

WHAT DO YOU DO, MUMMY, WITH YOUR CUSTOMERS?

OFENTSE Project consultant in South Africa

For today In my job, I help to process various waste streams from customers from different industries, turning them into valuable resources through reuse, recycling and reprocessing. I deal with plastic and scrap metal recyclers, biogas operators, precious metal and mineral extractors, paper shredders and composters. Their waste becomes a raw material to create new products, which embodies the circular economy.

For tomorrow Adopting a "zero waste to landfill" approach will bring us closer to eliminating any discharge into the soil, water or air that poses a threat to the environment and to human and animal health.

WHAT DO YOU DO, DADDY, FOR <u>SAFETY?</u> WHAT DO YOU DO, DADDY, WITH DATA?



Key Acco in France

For today My job is to manage all customer requests on a day-to-day basis, from meter problems and leaks to administrative and accounting concerns. Customer satisfaction is very important to Key Accounts and my colleagues, and I take great care with this. As an account manager, I can offer local authorities and administrations solutions that will help them save energy. The latest generation ON CONNECT SWITCH and ON CONNECT FLUIDS tools can be used to monitor and prevent water leaks, with a view to preserving resources. And, having seen at SUEZ a resource going to waste that is so lacking in some places, I became a volunteer at AQUASSISTANCE to go to countries that are not fortunate enough to have a drinking water supply. It's so important to help them to have water nearby so that simple everyday tasks are no longer a chore for them.

For tomorrow With global warming, speed is of the essence! I hope that in the near future, installing intelligent ON CONNECT SWITCH valves will become an essential technology to avoid undetectable leaks. It's also important to attract our customers to the ON CONNECT FLUIDS solution to help them save energy, by offering them this comprehensive solution for all their fluids (water, gas and electricity).

For today I'm helping to set up the Environment Health & Safety system for SUEZ Water Operations China, which covers 70 sites across our 30 joint ventures. This EHS system not only complies with Chinese regulations and Group requirements, but also enables our employees, subcontractors and other third-party workers to clearly identify risks in their work in order to improve safety for all. In short, it's about "going to work happy and going home safe". I'm also in charge of data management, helping the company to organise its assets and take advantage of megadata for our technical management.

For tomorrow I intend to stand out from traditional management models in my field of responsibility by making full use of digital and artificial intelligence technologies to help manage and steadily grow SUEZ's business in China. We are, in fact, already implementing this approach and it has received positive feedback in the industry.

> L Deputy Technical Director in China

DOMINIQUE Key Account Manager

Our Leadership Model. a mindset for a purpose

Our purpose reflects our contribution to society and the reasons we exist. After being launched in November 2023 and built into all Human Resources processes in 2024, our Leadership Model echoes this purpose. Its aim is to fulfil, with ambition and relevance, the needs and expectations of our customers through a change in our corporate culture. A shared foundation of values and behaviours to accomplish things together and guarantee the success of our strategy.

Whatever the quality of a strategy, if the organisational culture is not aligned with it, there can be no guarantee of success (...). This is the purpose of the leadership model: it clarifies the attitudes and behaviours that are expected to inspire everyone in the company and contribute to the cultural shift at SUEZ", said Laurent-Guillaume Guerra at the unveiling of the Leadership Model on 23 November 2023. This official mission statement aims to steer the progress of our corporate culture.

Carefully formulated from a range of contributions, our Leadership

Model brings together the results of several employee workshops addressing corporate culture: the opinions of the organisation's main stakeholders on the culture required to support our strategy, and the alignment of the executive committee on our vision and the key behaviours expected.

Our Leadership Model is based on four easy-to-memorise and detailed pillars, and on a set of practical behaviours.

Shape the future... to place emphasis on the ability to imagine and articulate a positive and tangible future for SUEZ. This dimension encourages us to think strategically, promote the green transition, innovate and define a clear and concrete direction for the company.

Make it happen... to focus on delivery and results, and foster a culture of accountability and success.

Collaborate to elevate... to highlight the power of teamwork and collaboration as key to achieving outstanding results. Unleash the talent of our people... to underscore the importance of empowering our people and supporting their development.





Rolled out in 11 languages, four posters bring together managers and employees at SUEZ, whatever their role, area of work or country. These behaviours are for everyone, and each of us must take ownership of them. For example, if I am an Operating Officer, what does it mean for me to "be customer oriented" or "set an example"? Our Leadership Model now constitutes the backbone of our corporate culture which will draw on its four pillars for recruitment, employee development and performance review.

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Olympic How did you come into your line of work? torch bearer: the adventure of a lifetime

Portrait of Mehiata Guyot

Mehiata is 32. and has been working for Polynésienne des Eaux since 2012. She will carry the Olympic Torch in French Polynesia, and has a burning passion for lots of other projects.

Why are you going to carry the Olympic Torch?

MG : I think my personal background was the reason that prompted Papeete, the partner city of the Olympic Games, to put forward my name to be a torch bearer. I live there, and I represented Polynesia at Miss France as Miss Tahiti¹. I accepted their invitation in June 2023, but it wasn't until January 2024 that we received

an official e-mail from Paris 2024 confirming that I would be one of the Olympic Torch bearers. There will be 124 of us in the Polynesian relay, each carrying the torch 200 m through about ten municipalities. On 13 June, we will set off from the surfing spot of Teahupo'o and complete our journey in Place de To'ata in Papeete, where the flame will light a cauldron to officially mark the arrival of the Olympic Games in Polynesia.

¹ Mehiata was runner up in Miss France 2014

How do you feel about having this honour?

MG : I think it's the adventure of a lifetime. I like giving value to what I do. In my work at Polynésienne des Eaux, and soon with the Olympic Torch.

MG : I've always been interested in professions to do with water and the environment. I did a communications and human resources internship at Polynésienne des Eaux in 2012, and l've been there ever since. Supplying water to the Polynesian population is a cause I care about a lot, because few towns and villages have access to water. I liked the idea of joining a small company with a tight-knit team, like a family, and whose mission I was enthralled by. Despite being in the middle of the ocean, water remains a precious resource. Here too, we experience periods of drought. So we have to be careful in how we use it. The territory is made up of 119 islands, some of which don't have groundwater. We have to draw water from the lagoons, like in Bora-Bora for example. The environment lies

at the heart of our everyday lives, and water at the centre of our concerns.

What do you do in your job?

MG : I take part in events, open days and Water Villages where I run workshops to raise awareness among young people. I am also invited into schools to talk about the drinking water journey and promote water conservation. I explain the benefits of the technology and projects that we implement, particularly with the deployment of smart meters in municipalities wishing to introduce automatic meter reading, or with the osmosis plants in Bora-Bora. I am proud to contribute to supplying water that is 100% drinkable with Polynésienne des Eaux.

A sportswoman and a businesswoman with a cause

A big fan of surfing sports, Mehiata goes surfing, kitesurfing or foil surfing virtually every day. In 2022, she launched her own brand of environmentally friendly swimwear. Also on her list of keen interests, Mehiata regularly goes trail or marathon running with colleagues. She took part in the SUEZ Move Challenge.

Her one regret: "Too bad surfing doesn't count!"

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OUR PROJECTS REFLECT OUR COMMITMENTS

... so that solutions take shape here and now, by offering practical responses to the social and environmental challenges in a fast-changing society.

When the automotive industry reinvents itself to meet the requirement of reducing greenhouse gas emissions, the entire supply chain has to be replanned to secure electric vehicle energy sources. When the aim is to contribute to a cleaner world in China, a pioneering approach to our wastewater treatment plants is the order of the day. When recycling tonnes of items also provides a job to disadvantaged people, we support the largest reuse warehouse in the UK.



Dunkirk, the recycling channel's port of call

350 million electric vehicles are expected on the roads between now and 2030. This powerful acceleration, prompted by the European ban on the sale of fossil fuel vehicles in 2035, brings with it the difficulty of supplying raw materials to power them. To rise to this substantial challenge, SUEZ has joined forces with Eramet to build a lithium-ion battery recycling plant on the shores of the English Channel. An ambitious plan has come to fruition in Dunkirk's Grand Port Maritime, with a key milestone reached in the development of the innovative electric vehicle battery recycling process that was initiated by the two partners in 2019. Eramet (the European mining and metallurgical leader) and SUEZ have decided to set up their joint project ReLieVe in the heart of

"Battery Valley". Here is where gigafactories are being built to address, as of 2025, this key challenge of the green transition – the mass production of EV batteries – squared with the reality of exploitable and available resources. "As a leader in the waste sector, we provide innovative solutions to limit the consumption of virgin raw materials and secure supplies of secondary raw materials", points out Sabrina Soussan, Chairwoman and CEO of SUEZ.

> Securing supplies of the metals necessary for the energy transition in Europe

This project, supported by an €80 million European Union and BPI grant (to firstly finance pre-industrialization studies, followed by plant construction and operating costs for the first 10 years), will **enable the strategic metals used in batteries to be recycled in a closed loop, helping to secure the metal supplies needed for Europe's energy transition.**

ISTEN TO THIS ARTICLE

Sabrina Soussan, Chairwoman and CEO of SUEZ Agnès Pannier-Runacher, then french Minister for Energy Transition, Christel Bories, Chairwoman and CEO of Eramet and Luc Chatel, Chairman of the Automotive Platform

егамет

ReLieVe helps to pre-empt the pitfall of dependency on the rare metals making up electric vehicle batteries, also addressing the need for resource sobriety. From 2031, these batteries must contain at least 16% of recycled cobalt and 6% of recycled lithium and nickel.

This is an ambitious goal that requires the combined industrial expertise of the two leaders in their respective areas, which will be developed in two complementary plants.

Goal: 50,000 tonnes of lithium-ion battery modules recycled

In this project, SUEZ will dismantle batteries upstream to produce black mass, a powder that contains reusable lithium, cobalt and nickel oxides. Eramet will work downstream, using the hydrometallurgy process to extract and refine these strategic metals with a view to their industrial reuse. This process is being tested in its Research and Innovation centre in Trappes (west of Paris) in an 800-sqm pilot plant, a reduced-scale replica of ReLieVe. The full-scale plant's annual recycling capacity amounts to 50,000 tonnes of modules, or the equivalent of 200,000 EV batteries. "As a responsible mining operator, our role is to develop this resource and give it a second life, with a considerably reduced environmental impact", adds Christel Bories, Chairwoman and CEO of Eramet.

With the combined expertise of the two partners, the performances expected from ReLieVe offer the prospects of meeting or surpassing European legal requirements, which specify a 50% recycling rate for lithium by 2027 (80% by 2031) and a 90% rate for cobalt, copper and nickel (up to 95% four years later).

23

In Chengdong, our wastewater treatment plant soaks up the sun

We are spearheading a truly pioneering approach in China. Our revolutionary initiative, consisting of generating solar power by building solar panels into the infrastructure of treatment tanks, is contributing to the construction of a greener world.

In Jiangsu province, SUEZ and its local partner¹ are helping to improve the integrated water supply and drainage systems of the city of Changshu, contributing to our overall wastewater treatment and waste management solutions at local level. One of them is the Chengdong project, where we manage the wastewater network and treatment plant under a 30-year concession contract.

Spanning around 90 hectares and with a total capacity of 120,000 m³/day, the wastewater treatment plant (WWTP) serves a population of 461,400. The plant uses 30% of the recycled water in various ways, in particular to irrigate green spaces and roads.

¹ Jiangsu Sino French Water Co. Ltd

Setting a new standard for renewable energy in WWTPs

However, where we are truly breaking new ground in terms of impact is the incorporation of solar panels into the existing infrastructure of biochemical treatment and sedimentation tanks. In summer last year we launched this original initiative to capitalise on solar energy by installing 7,700 photovoltaic modules covering a total of 34,000 sqm, thereby setting a new standard for renewable energy in WWTPs.

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"Our innovative project not only contributes to energy self-sufficiency, but the excess power can be reinjected into the grid to achieve substantial annual costs",

At the same time as efficiently reducing the wastewater treatment plant's operating costs, the project also avoids the consumption of 1,300 tonnes of coal per year: a boost to the green, low-carbon and sustainable development of our joint venture.

> Meanwhile, the implementation of SUEZ' cutting edge technology in the neighbouring artificial wettand spanning 14,000 sqm (including a 4,500 sqm lake) constitutes a natural way of treating microorganisms and heavy metals. The 12.5 million m³ of recycled water that is produced each year is channelled back into the local ecosystem.

The ecological wetland has today taken on the status of a wildlife sanctuary with an abundance of fish, ducks and vibrant plant life, illustrating the SUEZ vision of a harmonious balance between development and nature The local government authority is drawing inspiration from our model to develop the "solar power + WWTP" model in other facilities, placing emphasis on reducing sludge, managing resources, using renewable energy and pursuing better environmental stewardship. Our goal is to find new ways of reducing carbon emissions in wastewater treatment, and contribute to building a greener world.

The new installation generates up to 4,000 MWh of green electricity per year, thus contributing to the plant's clean energy ambitions. The excess energy generated, i.e. produced but surplus to the plant's requirements, is fed back into the city's power grid. Our project substantially reduces the plant's demands on the national grid, and contributes to the decarbonisation of energy in the city of Changshu by cutting carbon dioxide emissions by 3,400 tonnes.

Extracting economic, environmental and social value from waste

A circular economy to stay in the loop

Driven by the belief that environmental services can play a major role in inclusion, SUEZ has made societal innovation a powerful and differentiating pillar of its service offering for more than 20 years. In Greater Manchester, the 2021-launched Renew Hub - the largest reusable goods depot in the UK spanning 5,000 sqm – has proven to be an overwhelming success, in terms of both the recovery and the reuse of hundreds of tonnes of pre-loved items and the economic and social impact of this approach.

With the SUEZ subsidiary Rebond Insertion founded in 2002, the Group offers waste sorting, sorting awareness, bulky and multi-stream household waste collection and street cleaning services through the employment of socially disadvantaged people. Since its inception, this company that holds "social and solidarity business" approval (ESUS in French) has supported more than 12,000 people, of whom nearly 7,800 have since found a permanent job. Building on this experience, SUEZ is fulfilling its social responsibilities across the English Channel to promote this virtuous circle.



Launched in 2021 in association with Greater Manchester Combined Authority, made up of Manchester and nine other councils, the Renew Hub offers a second life to items donated by local residents by selling them at affordable prices or donating them to disadvantaged groups via charities. In two years, over 130,000 toys, bikes, items of furniture, white goods, electricals and bric-a-brac have been reconditioned and sold either in Renew shops or in the online Renew Market hosted on eBay.

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sorters on site.

in good condition.

The proceeds of these sales result in annual donations of £100,000 (approximately €116,000) to the Greater Manchester Mayor's Charity which works to fight homelessness. and £220.000 (about €255.000) to the Recycle for Greater Manchester (R4GM) Community Fund, which focuses on reducing waste and increasing recycling and re-use. Through these donations, the Renew project has so far contributed to the funding of 46 community groups pursuing social and environmental goals, helping Greater Manchester in its drive to reach net zero by 2038. At the Awards for Excellence in Recycling and Waste Management 2022, the initiative won the "Circular Economy Success" category for the innovative work achieved by the one-of-a-kind and highly efficient partnership between GMCA and SUEZ.

The Hub's repair activities are conducted in partnership with social economy organisations such as Recycling Lives, which organises an 8-week programme aimed at ex-offenders to provide them with skills and experience to support them back into employment.

The Group's other initiatives

This material and professional redevelopment can also be seen in Morocco where in 2014, at the request of the city of Meknes, SUEZ converted an illegal landfill into an exemplary waste recycling plant, meeting sustainability goals set by the Moroccan authorities, while also focussing on the social integration of the 180 informal

In France, SUEZ has designed two innovative and bespoke services for Nevers Agglomération, with two Recydrive facilities which modernise the user journey in waste tips, and a Recyshop, a 1,200 sqm upcycling store that gives them the chance to buy repaired and revamped goods at affordable prices.

SUEZ has also designed and provided Rennes Métropole with an entirely mobile scheme: the "Tri-Troc mobile". Users can drop off items in the same categories of waste as for a normal tip, and a reuse area offers them the option to leave or pick up objects that are still



HOW DO YOU CONVERT OUR WASTE INTO ENERGY?

Our dustbins are a source of energy.



also known as clinker, will be used as a sub-base for road building

Incineration

The emissions from the burning process are captured and treated, and the heat goes into a boiler with pipes filled with water.



Energy from waste: energy with a future!

Between now and 2028, more than 30TWh of energy could be generated in France from non-recyclable waste. That's the equivalent of six nuclear reactors, and more than double the amount produced in 2020.

Source: Fnade (National Federation of Depollution and Environmental Activities)

The steam drives a turbine which converts it into energy. This energy can be used in a district heating network or an industrial steam network. The heat generated can also be used to heat vegetable farmers' greenhouses. It can alternatively produce electricity for use on site or reinjected

WHY RECHARGE **GROUNDWATER?**

Between 60% and 90% of the water we all use comes from groundwater. It is the largest freshwater reservoir on our planet. Groundwater rises during favourable periods (high rain and snowfall, low consumption) and drops during unfavourable periods (drought, high consumption due to tourism, irrigation or industry, etc). To maintain an acceptable level, SUEZ recharges groundwater using an innovative and eco-friendly process that draws inspiration from the natural water cycle.

Transportation to infiltration site The water is then transported to an infiltration site.

Pumping surface water

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Water is pumped from an available body of water or from surface water, like a river.

Treatment

Depending on the quality of the water withdrawn and the intended use of the groundwater, this water may be treated - by screening, decantation/filtration or even membrane-based treatment to cleanse it of particles and micropollutants.

What is groundwater?

Groundwater is a mass of water contained in porous and permeable rock or sediment, also known as an aquifer. The water making up groundwater comes from precipitation like rain, sleet and snow. Some of this water soaks down through pores and cracks in the ground.

There are two types of aquifers: phreatic and confined. Phreatic aquifers drain freely at a shallow depth. Confined aquifers are trapped in impermeable geological formations.

Most underground aquifers can be accessed by human activity. They provide a sizeable source of drinking water, once recovered and treated for human consumption.

Now the groundwater has been recharged, the water table's reserves are healthy in terms of both quality and quantity.



Groundwater accounts for 99% of all liquid freshwater reserves on Earth.

Source: Shiklomanov and Rodda, 2003 (quoted in Unesco, 2022)



Infiltration

The water can be infiltrated using infiltration tanks or shafts. In the case of tanks, it passes through layers of sand and gravel before it reaches the water table which generally lies only a few metres below our feet, at a rate of several decimetres or metres per day. This filtration completes the cleansing of particles, organic matter and microbiological pollution. It is also possible to recharge confined groundwater by drilling special boreholes to recharge it directly.

Groundwater recharged





Undergeound metody

For the harmonious preservation of our terrestrial heritage

A professor at the Muséum d'Histoire naturelle, at the universities of Gdansk (Poland) and Kunming (China), Chairman of the federation BioGée¹ and member of the scientific committee of Reworld Media², Marc-André Selosse is a specialist in the connections between fungi and plant roots. The mycologist has devoted years to raising the awareness of the general public and policymakers of the importance of preserving our soils. He is the author of several books published by Actes Sud, including Jamais seul : ces microbes qui construisent les plantes, les animaux et les civilisations in 2017, L'Origine du monde : une histoire naturelle du sol à l'intention de ceux qui le piétinent in 2021 and Nature et préjugés - Convier l'humanité dans l'histoire naturelle, published on 6 March 2024.

¹ The BioGée federation is a group of associations, learned societies and institutions whose mission is to bring together players involved in life sciences and technologies, earth and environmental sciences (STVSTE). ² French leader in thematic media.







In your book *L'origine du monde*, you emphasise the heritage nature of soils and you call for greater respect for them. To what extent can we say that soil is fundamental?

M.-A.S. : We are intimate with soil, which is the source of everything we are made of: nitrogen, potassium, phosphorus, calcium and magnesium. It's not a foreign body in the environment: soil is what we are. We should all care about it. At the very heart of the Earth's ecosystem, it is everywhere, but we give it very little consideration given its depth, which varies from a few dozen centimetres to several metres, and even hundreds of metres in tropical zones. This depth is inhabited by 50 to 75% of the total living mass of ecosystems. In total, between 25% and 60% of living species are considered to be in the soil. Their action has an impact on the climate, on the quantity and quality of water and, even at a distance, on the fertility of the oceans. Soil is not only a place of species biodiversity, it is also a place of functional biodiversity. These are also known as ecosystem services. Although animals play an important role in churning up soil components and making holes for water to penetrate, it is microbial diversity that attacks rocks and helps to dissolve them, in particular to release mineral elements that are good for plants. It also attacks dead organic matter (which plays a role in combating erosion), slowly releasing the nitrogen, phosphate and carbon that make it up: all things that contribute to soil fertility. In fact, this is the primary function of soil: to create fertility..

In other words, soil influences the climate through the life of soil. And that's what makes our planet liveable.

What is the second function of soil?

M.-A.S. : We surface organisms find it hard to grasp the diversity of what goes on underground. Some bacteria found in digesters breathe CO_2 , releasing methane, a greenhouse gas 50 times more effective than CO_2 . Others breathe nitrates, especially in soils where these nitrates have been used as fertiliser or in irrigated soils, releasing nitrous oxide, which is also a greenhouse gas 230 times more effective than CO_2 .

In other words, the soil influences the climate through the gases emitted by the life it supports. And that's what makes our planet liveable. If there were no greenhouse gas emissions, we wouldn't be able to live on Earth because it would be -50°C.

In nature, things are often neither good nor bad. It's the dose that counts, like sugar in food. I'm very concerned about anthropogenic (human-generated) greenhouse gas emissions, particularly those caused by the over-oxygenation of the soil. However, it's important to understand that what the soil emits spontaneously is what makes our planet viable. When we put organic matter in the soil, such as manure, this waste will be decomposed. with soil life gradually breaking it down and feeding off it, with retention times varying from 10 to 500 or even 1,000 years depending on the constituents. This is a way of storing carbon and limiting excessive greenhouse gas emissions from the soil.

A bit like biochar does. What do you think of this solution?

M.-A.S. : This carbonised organic matter *[it is torrefied at SUEZ, see article on pages 8 and 9 – Ed.]*, which is enduring because it can no longer be degraded, performs only three of the four functions of the biosphere: it retains water, plays a role in soil structure and stores carbon. However, as this carbon is no longer "consumable", it will not feed micro-organisms. Fresh organic matter must therefore be added. We know that biochar is very good at retaining soil nutrients and providing shelter for microbes. It therefore has many virtues. Produced under the right conditions and within the framework of appropriate regulations, biochar is one of the solutions to harmful emissions.

Can we say that soil is the world's biggest recycling plant?

M.-A.S. : Yes, but with one caveat: there are things like plastic that living organisms can't recycle; at least, not yet, because perhaps in the long term they will learn to do so. What we give back to the soil today has to be sorted. I was amazed to discover that compost is legally allowed to contain up to 3% plastic.

I think this tolerance is unacceptable. Let's not forget that no one can remove the microplastics already present in the soil, it's just not feasible. We need to fine-tune these laws in view of the actions of both industry and the general public, so that we can give back to the soil what it can recycle, what will make it fertile. Let's not forget that microplastics fragment and end up releasing endocrine disruptors that are very dangerous for soil life. but also for our own: remember that all the water we drink, without exception, passes through soil, which is a tremendous tool but, if inappropriately used, can become a considerable danger. While soil has an enormous capacity to break down undesirable molecules (80% of pesticides and herbicides are destroyed within a year, 10% remain and 7.7% are released into the water), it does have its limits. We really need to learn how to sort our waste properly.

It may look like I'm caring for soil, but in reality, from the outset, I've been caring for our children.

Don't you foresee any feasible solutions to deal with this pollution, like plasticeating fungi?

M.-A.S. : We have come to realise that there are microbes in our bodies that are necessary for us, while others must be avoided at all costs. The same applies to soil. We have lost the spirit of Pasteur, with whom people today associate the sole idea of hygiene. whereas he never considered all microbes to be harmful. Being a good chemist, he discovered useful microbes by working with industrialists who were carrying out fermentations. He understood that without microbes' ability to recycle and create the building blocks that would allow plants to grow back, there would be no life. I do believe that in a million years' time, plastics will be devoured by organisms in the environment, but natural selection doesn't happen overnight. It's obvious that living things are capable of eating just about anything and adapting to it. Apart from the indisputable principle of using as little plastic as possible, which is the most appropriate solution at the moment, there are fungi that can feed exclusively on plastic, but it has to be said that they are not yet very effective in the environment. We may have this hope in the long term, but it's not a hope for the upcoming generations, for our children, and that's what worries me. It may look like I'm caring for soil, but in reality, from the outset, I've been caring for our children, whose future is under immediate threat.

What is the role of fungi in soil?

M.-A.S. : They are great recyclers, with the task of breaking down undesirable molecules that reach the ground. They are the only organisms capable of performing certain operations, such as consuming the lignin³ that makes up an average of 30% of the plant matter in wood. While the diversity of animal life is more obvious, we don't necessarily see the diversity of fungi. which is just as vast. Some fungi decompose organic matter, attacking the remains of living things. Others eat what plants give them; they are known as mycorrhizae, a rather barbaric name for the close association of plant roots and fungal filaments. My research teams at the Museum in Paris, Gdansk in Poland and Kunming in China are working on this interaction in which the fungus, fed with sugar by the plant, will in return provide it with nitrogen, phosphate or potassium. In their own interests, fungi have acquired the means to protect roots against excess calcium, heavy metals or soil pollutants. With this protective role, these fungi are absolutely vital for plants. But let's not be naive: we also find pathogenic fungi in the soil. Many farmers and winegrowers have problems with root rot⁴, a fungus that kills and devours the roots of vines and crops.

There is still a strong capacity for resilience. That doesn't mean we should carry on doing whatever we like.



How can you make the right choices amid this fungal diversity?

M.-A.S. : It's a problem we've never dealt with properly. When you have broad-spectrum molecules that kill pathogenic fungi (a bit like antibiotics), the others suffer the consequences. Today's challenge is to have much more specific control strategies, so as to kill the bad ones while keeping the good ones. We're starting to see the beginnings of this, particularly with biological control, which offers the prospect of more surgical methods, but in fact there isn't enough research going into these solutions to implement them today. We could be pursuing this solution, but we are coming up against a problem of mindset, a tendency to put more trust in technology and chemistry than in living organisms; to see living organisms more as a problem than as a solution. The point is not to disregard technology and chemistry, but to make better use of the living world. Soil is one of the compartments in which the decline in diversity involves the loss of individuals, without there yet being any real mass extinction of species. If populations continue to fall at some point, we will lose species, but if we get our act together, if we improve our practices to do with soil, all the players will still be there. There is still a strong capacity for resilience. That doesn't mean we should carry on doing whatever we like, but it does mean that we're still at a stage, at least in our regions, where we can quickly make a comeback.

Most of the Earth's ecosystem is invisible to the eye.

So we still have the ability to act?

M.-A.S. : Soil is much more resistant because it heats up and cools down slowly. It is less affected by climate change than above-ground plants. What we see in experiments is that the soil is resilient, even in the face of extreme drought. Today, it's not so much climate change in itself as the accumulation of all the other stresses in the soil that endangers its life and therefore its ability to provide services. When soil becomes infertile, it takes at least several decades for it to regenerate. It's a heritage, and here I'm back on the subject of our children and our duty to pass it on to them. And before thinking about remediation, the first reflex should be not to damage it. There is a real civic problem here. We sense that the education we give young people in biology and nature is inadequate. I chair BioGée, a federation that is fighting to put the living world back at the heart of education for young people. At primary school, there is no curriculum on the environment and the living world, and yet it's one of the fundamentals. Part of the solution will lie in education, with more interdisciplinarity around living things. We still believe that the basics are knowing how to read and how to count. I would add with great conviction that, above all, we need to know how to live (savoir vivre in French) and how to act towards the living world. Savoir vivre is an essential courtesy that we owe to nature.

BioGée is a collective movement founded on 9 October 2019 at the Muséum national d'Histoire naturelle and whose articles of association were filed on 4 August 2020. The federation brings together 6 academies (Académie des Sciences, Académie d'Agriculture de France, Académie nationale de Médecine, Académie nationale de Pharmacie, Académie Vétérinaire de France and Académie des Technologies). the Muséum national d'Histoire naturelle, 4 federations or corporate foundations, 33 national scientific societies, 11 education-related associations and 12 associations for environmental protection or sustainable development, and it remains open to new members.

Its mission: to champion the contribution of life, health, earth and environmental sciences to the education of young people, the lives of citizens, decision-making and the management of crises facing French society.

³ Lignin is a biomolecule, one of the main components of wood, along with cellulose and hemicelluloses. ⁴ Root rot is the generic name for a disease of woody plants caused by certain wood-eating fungi that decompose the wood in the roots of trees, shrubs and bushes.



"Nature et préjugés : Convier l'humanité dans l'histoire naturelle" (Nature and prejudice: Inviting humanity into natural history).

In this more cross-disciplinary book. Marc-André Selosse reflects as a naturalist on the upheavals of the 21st century and sets out to dispel the preconceived ideas that distance us from an accurate vision of nature, even human nature. With humour and sensitivity, the biologist dismantles misleading discourse to raise awareness and bring us closer to this little-known nature, sometimes so far away and yet so close. Published by Actes Sud.

On a final note, would you say that soil in its entirety is our best life insurance?

Yes: everything that makes up the world and the living organisms around us can to a great extent be found in soil. I would even go so far as to say in soils, given the multiple ways that soils are useful, from their climatic function, such as the boreal peat bogs that cover 3% of the earth's surface and store three quarters of the organic matter, to their nutritional function in the high moors where the best thing to do is to let the animals graze. Most of the Earth's ecosystem is invisible to the eye, but it is of enormous importance. It's a bit like with fungi: the exposed part, the shape we are all familiar with, which is the reproductive part, represents only a tiny part of the underground network that weighs as heavily in our ecosystem as it does in our future. The life of micro-organisms in soil has very important functions. Its interaction with both living and dead things is vital for everything that exists on Earth, plants and humans alike. We must preserve it.



34 times around the world

Designed to be a collective sporting and charitable initiative, the first edition of the SUEZ Move Challenge mobilised around 2,500 participants from all over the world. The Group's employees, invited to form teams and run, walk and pedal in aid of the Fondation des Femmes, deployed tremendous energy to make this initiative a huge success.

Inspired by the successful SUEZ Run Challenge (the first charity run held in 2022 involving 650 employees in France), the SUEZ Move Challenge appealed more widely to employees in France and abroad. This invitation to support a major cause met with an overwhelming response.

In total, 611 teams walked, ran or cycled 1,352,443 km (or 34 times the circumference of the Earth) in the first group-wide edition of the charity sporting challenge. Between 13 September and 7 November 2023, participants from all over the world clocked up miles and kilometres in aid of the Fondation des Femmes. in a campaign which is set to become a regular annual fixture. Through their prowess and endurance. the sportspeople taking part in the SUEZ Move Challenge together surpassed the million kilometre bar, triggering a €50,000 donation to France's reference organisation combating genderbased violence.

Using the SUEZ Move Challenge app, participants signed up in mixed-gender groups of up to 4 people headed by a team captain. Together they took part in sporting events, quizzes and photo challenges and received sporting tips from the FDJ-SUEZ team, with the top three teams coming away with prizes. The app also proved very popular, with participants giving 17,000 correct answers in the quizzes and sharing 15,000 photos of their sporting exploits and litter picking activities.

"The #SUEZMoveChallenge hashtag exceeded all our expectations", commented Sabrina Soussan, Chairwoman and CEO. "Well done to everyone involved for so brilliantly embodying values that are of such importance to SUEZ: team spirit, pushing the limits, solidarity and inclusion." All the more reason for us all to look forward to the SUEZ Move Challenge 2024.

With material support, we help women in South Africa When it acquired Enviros to consolidate its footprin pleased to note that it sh



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When it acquired EnviroServ in October 2022 to consolidate its footprint in Africa, SUEZ was also pleased to note that it **shares values with the largest waste management operator in South Africa.** While EnviroServ contributes to the development of the circular economy through waste recycling, it also brings to life its vision of **corporate social responsibility through a series of valuable initiatives such as its longstanding support for this business run by women.**

Launched in 2004, the Intuthuko

project brings together a group of "sewing ladies" who perpetuate a traditional craft by making embroidered articles and selling them to earn a decent living. By illustrating their everyday

By Illustrating their everyday challenges through their work, these seamstresses draw attention to important questions for South Africa and their

community. In the Etwatwa township near Johannesburg, this social investment project supported by EnviroServ since the outset has led to the development of a robust business that employs some 30 people and today even exports its designs.

The Group is truly proud to support the economic empowerment of women and local communities.

)2-5419 Anne Samek – Publishing manager: Renée Clément



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EVA JOSPIN CORINTHIAN FOREST

Using corrugated cardboard as a medium, Eva Jospin creates monumental scenery and sculptures, dreamscapes and imaginary constructions inspired by nature and certain aspects of the history of art. Combining scale and detail, nature and culture, her use of cardboard goes back to her former inspirations as a set designer of a low-cost, readily destructible raw material. "Desacralized and convenient", the material is magnified by the shape and by the folds, cuts, overlays and other manipulations of the artist.

Through these simple pieces of cardboard, Eva Jospin maps out and 'builds' imaginary sites, caves, theatres, but above all forests. Dense and mysterious, her fantastic landscapes explore the forces of nature in layers, skilfully combining dream and tradition. Devoid of humans, animals or colours, they are an invitation to contemplation.

