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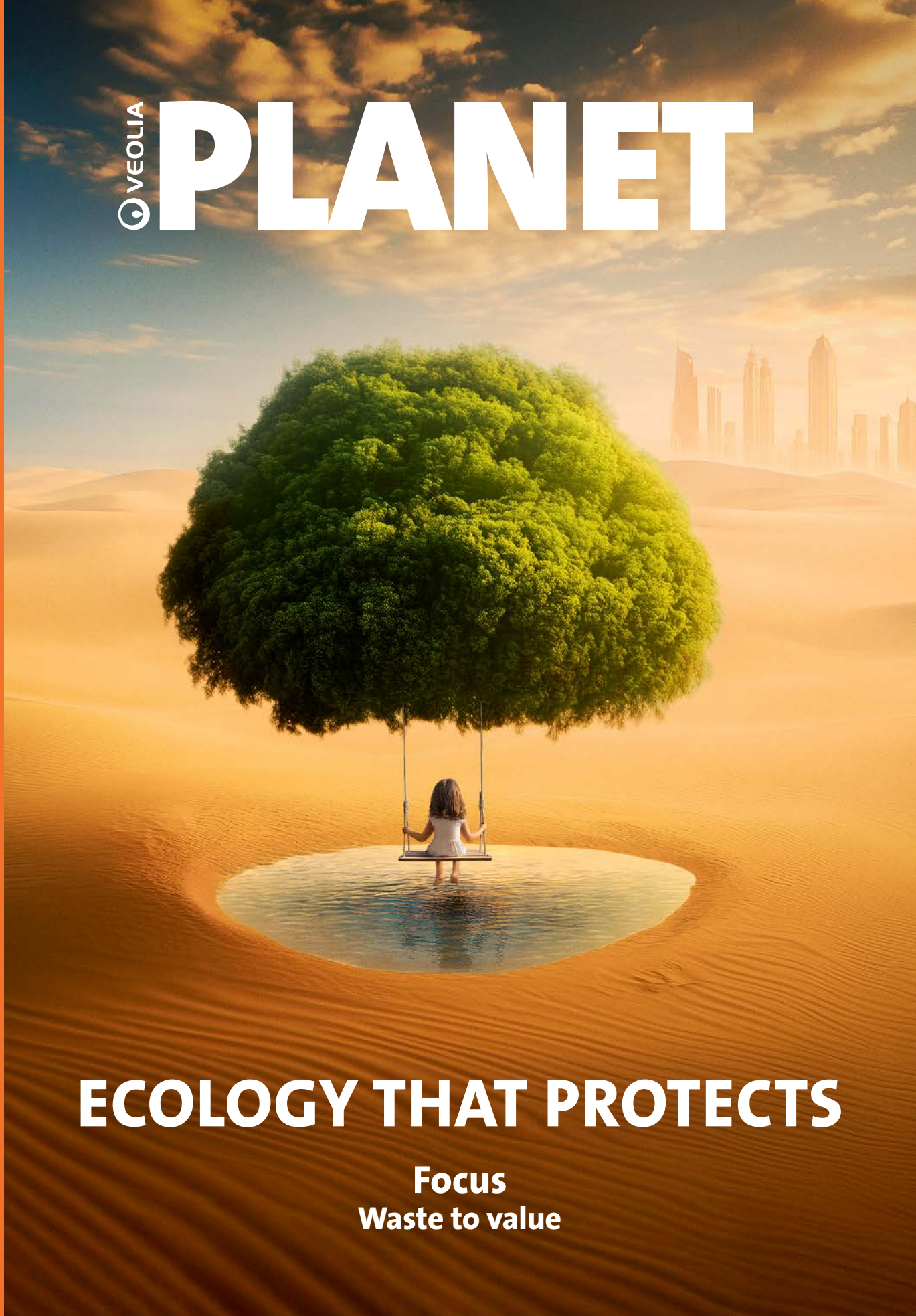

ECOLOGY THAT PROTECTS

Focus
Waste to value

PLANET

RESOURCING THE WORLD

PLANET

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ESTELLE BRACHLIANOFF
Chief Executive Officer of Veolia

“

There's no denying the facts. From Valencia and Mayotte to Los Angeles and beyond, our cities are flooded and aflame. Our homes are becoming uninhabitable, unsellable. People are watching their life savings vanish in the blink of an eye, creating a creeping sense of insecurity. **Climate breakdown knows no law and no bounds. No one is safe and it strikes without warning.**

The problem is that we are continuing to focus on the symptoms rather than the causes, forcing us to behave reactively instead of proactively. The measures that would have allowed us to protect ourselves have all too often been discredited, drowned in discourse sometimes seen as moralizing, punitive, and disconnected from everyday reality. **And yet it is not so much the planet's survival that is at stake. It is our health, our purchasing power, and the survival of our industries and our jobs. It is our cities' independence and attractiveness, our businesses' competitiveness, our well-being, and our sovereignty.**

How can we reduce our bills? Eradicate pollution-related diseases? Achieve food sovereignty? **All these questions are rooted in a common denominator: our natural resources. They are essential to us all and belong to us all, driving our economy and underpinning our civilization.** Even without the climate crisis, natural resources have started to become increasingly scarce. Quality is falling and conflicts over their use are increasing.

“Ecology is not an obstacle to overcome. It's how we protect ourselves, today and tomorrow.”

At a time when the crucial challenges of re-industrialization and competitiveness are rearing their heads, **our very dependence on resources makes us vulnerable.** It destabilizes our economies, with profound consequences on supply chains and the prices people have to pay.

The time has come to act, adapting our models while improving our everyday lives. For example, rather than importing fossil fuels, let's start by making full use of our local resources. By turning our waste into green energy, we don't just make our regions more independent and more resilient – we also reduce local residents' electricity bills. And that's a tangible benefit. There are also solutions for industry. Rather than allowing data centers to consume even more water and energy, let's start by rethinking how we design and manage their sites. By reusing treated wastewater, recovering heat, and turning to AI, we have the tools we need to significantly reduce their environmental footprint while creating value and making savings. And that's what makes the difference.

It is time to put an end to vague promises and hidden constraints. **Ecology is not an obstacle to overcome. It's how we protect ourselves, today and tomorrow.**

218,000 of us. Veolia employees.

We are the Resourcers.
Together, we form an optimistic and determined team committed to an ecology that protects.
Planet is our magazine, but it also belongs to you.
All of you who work each and every day to come up with solutions for a sustainable and desirable future.
Dive into its pages to read our stories and find out about a host of projects – ours and yours.
Let's share our commitment and our expertise as we strive to protect the planet.
Together, we can preserve our resources.

Together for an ecology that protects.

Editors-in-chief *(left to right)*:
Laure Antoni, Manon Capmarty, Alexis Madelain, Fanny Demulier, Feryel Gadhoum, Pauline Le Golvan, Carrie Griffiths, José Guerra, Céline Hallier, Denisse Ike, Eva Kucerova, Gabriella Lazzoni, Nicolas Levy, Robert Lozano Vergés, Evgeniya Mazalova, Kate Moonen, Marie Morresi, Romain Prudent, Justine Shui, Arthur Thoux.


Bob Cappadona

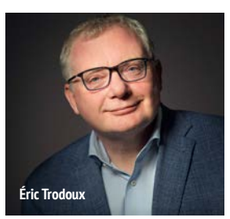
Bob Cappadona, President and Chief Executive Officer, Environmental Solutions and Services at Veolia North America

Bob Cappadona, an Environmental Health and Safety (EHS) Engineer by training, holds a degree in Natural Resources and Chemistry from the University of Michigan and has completed his coursework in Environmental Health from the University of Medicine and Dentistry of New Jersey. In 1991, he joined Veolia Environmental Services as Director of Regulatory Affairs for hazardous waste management operations. Since then, he has held various leadership positions at Veolia in North America. With over 30 years of experience in environmental management, Bob Cappadona has developed extensive expertise in this field.


Benjamin Chan-Piu

Benjamin Chan-Piu, Director Liquid & Hazardous Waste Treatment & Recovery at Veolia's BS&P

Benjamin Chan-Piu leads Veolia's BS&P's Hazardous Waste division, bringing over two decades of expertise in waste management. After starting in rare earths at Rhodia, he joined Suez in 1999, where he built a distinguished career in hazardous waste management across Europe and Asia. His notable achievements include managing South Korean waste operations (2006-2010), leading Asia's largest hazardous waste incineration facility (2010-2015), and directing Suez's Asian hazardous waste operations until 2022, where Benjamin Chan-Piu oversaw 10 treatment facilities.


Éric Trodoux

Éric Trodoux, Senior Vice President Solid Waste Recycling & Recovery at Veolia's BS&P

Éric Trodoux directs Veolia's BS&P Solid Waste division, leveraging 30+ years in European waste management. Following leadership positions at Watco/Electrabel and Suez, he has been directly involved in international mergers, carve-outs, regulatory alignment and large-scale environmental compliance strategies-gaining a deep understanding of European industrial transformation. Éric Trodoux's expertise spans Energy from Waste, landfill, collect, biowaste, ferro & plastics recycling, hazardous waste management, and industrial transformation, while actively serving on multiple strategic boards.

SUMMER 2025

GARDEN TIME AT THE V

The gardens are in full bloom at the V, Veolia's head office in Aubervilliers. From the panoramic terrace to the green spaces outside the canteen and cafeteria, long summer days have arrived at the V. The gardens on the first and second floors with their views over the canal make the ideal spot for casual meetings and quiet working. Whether ensconced under the trees, sitting at a table or settled into a comfortable lounger, outdoor spaces become a natural extension of the office, as envisaged by Estelle Brachlianoff: Veolia's CEO wants this outdoor world to be a place where people can come to work, share and connect with each other in a harmonious open-air environment.

ISABELLE SERRO

UVIRA: THE RIGHT TO WATER

The Veolia Foundation is celebrating a long-term project running in the city of Uvira in the Democratic Republic of the Congo (DR Congo), at the center of a region where cholera is endemic. Working with its partners, the Foundation has developed a real-time online epidemiological tool to track this acute intestinal infection and suggest targeted responses. Photographer Isabelle Serro illustrates the project in her exhibition, *How to Improve the Visibility of an Epidemic Scourge in a Rebel-held Zone*, and shows the human face of a health crisis.

Devising sustainable new food models

Overexploited and polluted, a lake that once boasted some of the most fish-rich waters in the world is now driving families into poverty. Slow Food Tanganyika and the Lake Tanganyika Fishermen's Collective are looking into ways to make fishing more responsible and sustainable.

Making sure access to essential services no longer fuels inequality

The "Uvira: the Right to Water" project, financed by the French Development Agency, EU, Veolia Foundation and Oxfam, is partnering with Congolese actors to rehabilitate and extend the water distribution network and construct a large reservoir, among other aims. So that tomorrow these children can be children again rather than water-carriers.

Reinventing access to water in a fast-changing context

The people of South Kivu province, an area hit by armed conflict and the consequences of climate breakdown, are facing a paradox: DR Congo is home to over 50% of Africa's water reserves but only 52% of its residents have access to a source of safe drinking water.

Staying strong in especially turbulent times

A number of women have emerged as neighborhood leaders, motivated by a single priority: getting safe drinking water into homes as the most effective remedy against cholera. Every one of them is determined to fight this illness that causes potentially fatal acute diarrhea, vomiting and dehydration.

Health: combating cholera through access to water

The turquoise waters of Lake Tanganyika are a microbiological hotbed. The pressure of human activities and the impacts of climate breakdown mean the deep waters of the lake are home to growing health threats, including the cholera bacillus. The result is that this life-giving water resource can also be the source of an often fatal illness.

Energy for birth, life, growth

Access to a reliable electricity supply remains a pipe dream for most people in DR Congo, available to only 21% of them at present. This means they are forced to use alternative fuels such as wood, which can lead to greater deforestation. This mother and her children hope for a future made brighter by the guarantee of electricity for everyone.

Access to electricity, a key lever for economic development

The boat glides toward one of the works in progress. From renovating a hydropower plant to constructing solar power plants, and extending and consolidating electricity networks, all the projects promise improved quality of life and enhanced economic prospects, as well as the eradication of cholera: infection rates more than double when electricity supplies are cut.

Aquaponics, one answer to today's food challenges

The ongoing conflict in South Kivu has left its people facing emergency levels of food insecurity – a crisis that is even more severe for women, who are often the sole providers for their families. In response, some of these women have come together to practice aquaponics, a solution that requires minimal water – just 10% of the amount needed for conventional fish farming.

AUSTRALIA

Veolia builds a state-of-the-art recycling facility in Canberra

Veolia has signed a major AU$850-million contract to build and operate a new state-of-the-art recycling facility near Canberra. This ambitious 20-year project will process 1.3 million metric tons of household waste, as well as cutting carbon emissions by 520,000 million tons. Boasting the most advanced technologies available, including optical laser identification, the new facility will create 136 jobs and deliver a significant boost to the region's circular economy.

VEOLIA WINS A €100-MILLION CONTRACT WITH THE CITY OF LYON TO MANAGE AND MODERNIZE THE SAINT-FONS SEWAGE TREATMENT PLANT.
The goal is to transform this vital and long-established plant – one of the largest in France, with sufficient capacity to cater for a population equivalent to 1 million residents – and set it on the path to energy, water, and chemical frugality and sufficiency.

UNITED STATES

Veolia builds a cutting-edge incinerator in Gum Springs

Veolia opens a new chapter in hazardous waste processing with the construction of a cutting-edge thermal incinerator in Gum Springs, Arkansas. Set to be operational by the end of 2025, this innovative facility represents a turning point in hazardous waste processing. This ambitious project testifies to Veolia's commitment to environmental excellence. The facility is designed to become a benchmark for sustainability in the United States, setting new standards thanks to cutting-edge technologies and unmatched environmental commitments.

EUROPE

Veolia welcomes new investor Bpifrance and its Lac1 fund

Bpifrance has acquired through its Lac1 fund a €800-million stake in Veolia in a transaction that will also see a Bpifrance representative join the Board of Directors. Through this stake in Veolia, the global champion of ecological transformation, Bpifrance is demonstrating its belief in the Group's potential for profitable growth, its governance and capacity for innovation. The transaction will provide sustained support to boost resilience and competitiveness for regions and industries facing challenges from climate disruption. Bpifrance and Lac1 will partner with Veolia over the long-term to create value and respond to current and future ecological challenges.

VEOLIA HIGHLIGHTS ITS TARGETS FOR GROWTH IN THE SPANISH ENVIRONMENTAL SERVICES MARKET
with the inauguration of the first cold recovery network in the port of Barcelona on November 25, 2024. Focused on giving Spain the tools it needs to meet climate challenges, the Group is stepping up its innovation drive and initiating major investments to ensure better quality water, produce renewable energy locally, and increase the uptake of waste recycling and materials recovery.

UNITED ARAB EMIRATES

Cutting water use at ADNOC oil and gas sites

Veolia has sealed a strategic alliance with Emirati oil giant ADNOC in an innovative initiative designed to optimize water management in the oil and gas industry.
The partnership is critically important in a region facing major water challenges. It will see the rollout of advanced water management strategies incorporating in-depth water cycle analysis and the installation of cutting-edge flow monitoring systems. Veolia is committed to developing innovative solutions by leveraging its renowned expertise in water technologies, with the water sector accounting for 40.7% of its 2024 revenue. The Group is focusing on digital technologies and wastewater recycling to tackle this critical environmental challenge. The alliance further strengthens Veolia's position in the Middle East, where it has operated for over 50 years, generating revenue of €1.1 billion in 2023. The partnership also underlines Veolia's commitment to combining economic growth with environmental sustainability in its strategic markets.

MOROCCO

Launch of Africa's largest seawater desalination project

To help boost water resilience in the Kingdom of Morocco, where a six-year drought is threatening the country's crucial agricultural sector, Veolia has been awarded a 35-year public-private partnership contract to finance, build and operate what will be Africa's largest – and the world's second largest – seawater desalination plant.
With an annual capacity of 300 million cubic meters, it will enter service in 2028 and meet the needs of close to 9.3 million people in the Rabat-Salé-Kénitra and Fez-Meknes regions. The state-of-the-art facility will be powered by decarbonized electricity, primarily from renewable sources. Veolia's operational expertise will also ensure the plant delivers high levels of performance, balancing investment and operating costs to ensure the most competitive water price over the facility's entire lifecycle.

IRELAND

New Life Science Centre of Excellence opens in Dublin

The Life Science Centre of Excellence, representing an investment of over €2 million, will future-proof Veolia's leadership position. The center is designed to support the Group's customers in the pharmaceutical, biotechnology and medical research sectors to overcome obstacles such as the growing demand for resources at risk of scarcity, while also helping drive progress in public health. The all-new facility includes a customer showroom featuring many of Veolia's leading water treatment and purification technologies, as well as an industry-leading training program accredited by City & Guilds. The new facility has a dual purpose: offering in-house engineers hands-on experience before setting foot on customer sites, and training engineers from Veolia's customers in fields including equipment installation, maintenance, and advanced operational techniques.

HONG KONG

First private solar farm at a landfill site

A flagship example of public-private collaboration, the first privately funded solar farm has been built on a landfill site in South East New Territories. The 1-MW pilot uses over 1,800 photovoltaic panels and incorporates a number of major technological and operational advances. Led by Veolia, Sun Hung Kai Properties (SHKP) and CITIC Pacific with the support of the local authorities, the project marks a major step forward in the Hong Kong government's Climate Action Plan 2050, underscoring the vast potential for similar solar farms across Hong Kong. The site will be operated by Green Valley Limited (GVL), a joint venture between the three partners, and participate in the feed-in tariff scheme operated by CLP Power Hong Kong Ltd. Additionally, SUNeVision, a subsidiary of SHKP and Hong Kong's largest data center provider, will purchase renewable energy certificates from CLP for solar power generated by the solar farm.

VEOLIA AND NORWEGIAN INVESTMENT FUND NORFUND HAVE JOINED FORCES IN SEVERAL COUNTRIES IN AFRICA TO LAUNCH AN INNOVATIVE DEVELOPMENT AND FINANCING PLATFORM. The goal is to accelerate the pace of ecological transformation in African industry. The new platform will offer integrated solutions (design, build, operate and finance) via a one-stop-shop approach including off-balance sheet financing.

FRANCE

Veolia leads the shift to local decarbonized energy in Corrèze

On February 11, 2025, Veolia and SYTTOM 19, the public syndicate for household waste collection and treatment in Corrèze, sealed a 25-year strategic partnership that will build and manage a waste-to-energy plant scheduled to enter service in 2028. The project is rooted in a shared vision of sustainable and innovative local governance and forms part of the local authority's drive to reduce residual waste and boost its energy independence. The plant will generate 41 GWh of electricity annually, enough to power 3,000 homes, with another 31 GWh of heat produced yearly, enough to heat 6,500 homes, in addition to 50,000 metric tons of steam for the nearby Blédina factory. The plant will use AI across all operational processes at the site — managing the quantity of waste in the waste pit, high-efficiency boiler — as well as unique technologies including dry smokestack scrubbing and process water reuse, achieving zero liquid discharge and a perfectly circular loop.

BRAZIL

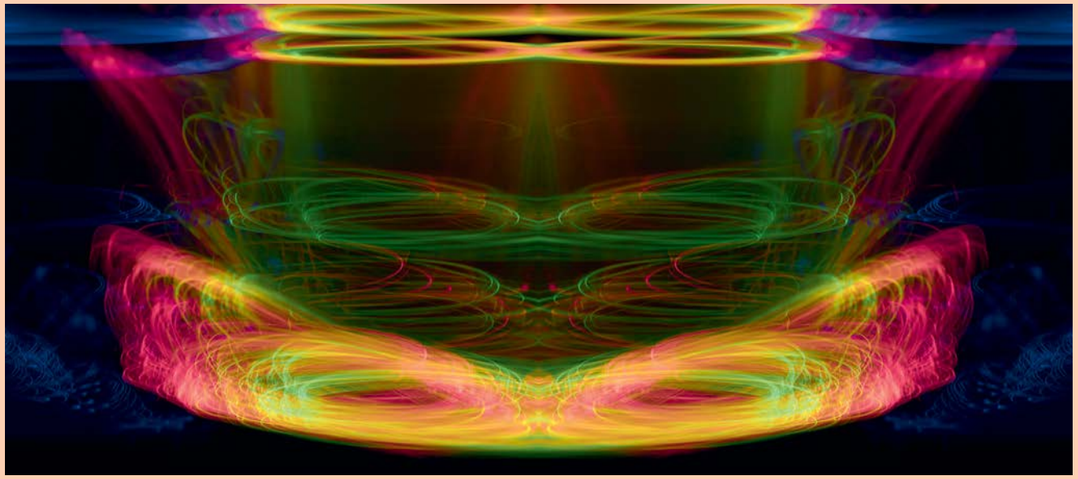
Paper and pulp producer Suzano to produce more and pollute less

Water treatment is crucial for pulp and paper production, and requires special processes for businesses like Suzano. So it was no surprise when the world's number one paper pulp producer turned to Veolia for the installation of a series of advanced technologies — including Densator clarifiers, S-Pak filters, ZeeWeed ultrafiltration, reverse osmosis, and its BAS™ biofilm activated sludge process — to treat industrial water, demineralized water, and wastewater at its new plant in Mato Grosso do Sul. With an hourly treatment capacity of 9,550 cubic meters for industrial water and 80 cubic meters for potable water, the facilities provide reliable water supplies to a site slated to become the world's largest producer of eucalyptus pulp, with an estimated annual production of 2.55 million metric tons, enough to expand Suzano's current production capacity by over 20%.

A STRATEGIC TIE-UP BETWEEN VEOLIA AND MISTRAL AI IS SET TO RADICALLY TRANSFORM MANAGEMENT AND MONITORING AT INDUSTRIAL SITES, encompassing water management, waste recycling, and local energy production. The two partners are ushering in a new era of innovation and efficiency and actively contributing to ecological transformation by combining cutting-edge technology from Mistral AI with data and expertise from Veolia.

Treating waste
from land to sky

Rising volumes of waste and increasing environmental pressures are prompting the emergence of a growing number of technological solutions and innovations for treating waste found in land and soil, water, air, and even space. Managing solid waste pollution is set to become one of the 21st century's most critical environmental challenges. Specific processes are used for each type of waste to ensure that human health and ecosystems are properly protected. The principles guiding research and the rollout of treatment processes are rooted in integrated approaches promoting solutions that cover the entire waste value chain. New technologies such as artificial intelligence and the Internet of Things are also increasingly used to optimize recycling. For example, combining AI with hyperspectral imaging radically changes how pollution is detected and mapped, simplifying decision-making processes. Pollution impacts every type of environment: terrestrial (waste build-up), atmospheric (industrial emissions), aquatic (water contamination), pedological (soil pollution), and spatial. For space, various technological solutions have been developed to combat the proliferation of space junk, including clean-up satellites, de-orbit systems, robotic arms, magnets, and lasers to alter trajectories. Ultimately, given the multiplying environmental challenges, technological innovations are essential to protecting our planet and the space that surrounds it, opening the door to ever more sophisticated and efficient solutions. ◗



Europe leads the way in innovations to combat solid plastic waste

Worldwide plastic output totaled 413.2 million metric tons in 2024. The bulk of this consists of primary plastics made from virgin materials, with recycled plastics representing just 36.5 million metric tons, and bio-based plastics a tiny share amounting to 0.3 million metric tons. This worrying situation makes plastic waste management a critical priority, driving a dramatic acceleration in innovations in this field. This is illustrated by a recent report by the Observatory on Patents and Technology[1] at the European Patent Office, which reveals that patent applications rose 18-fold between 1990 and 2023, focusing mostly on recovery (separation and purification) and recycling. Europe is the unchallenged leader in this race for innovation, accounting for 44% of worldwide patents over the past 30 years, particularly in AI-based systems for removing plastics from water. ◗

1. Source: Plastics in transition, Technologies for plastics waste management, April 2025 (European Patent Office)

Because We Care: Veolia sets its commitments to music

Veolia decided that setting its New Year wishes to music was the perfect way to welcome in 2025! Ten colleagues from around the world teamed up to make Because We Care, a powerful mixture of slam and song that celebrates the optimism and commitment of all Veolia's Resourcers.

Because We Care sums up Veolia's day-to-day commitment to ecological transformation, an ecology that protects people, the places where they live, the planet, our customers and, of course, all our employees. It is a phrase that perfectly reflects the Group's attitude: a collective determination to move forward together, optimistically, never turning away from our mission. A worldwide in-house casting call attracted applications from more than 70 Resourcers. The ten colleagues who made the final selection hail from the USA, Qatar, Brazil and Europe, embodying the diversity of the Veolia Group. The singers spent a few days together in Paris recording their vocals at the famous Ferber studios, with professional musicians on hand for help and advice. In tune with the Veolia Group, the lyrics are in English, French and Spanish, while the images alternate between studio shots and video images of colleagues around the world at Veolia-operated sites. Estelle Brachlianoff, Veolia's Chief Executive Officer, also lent her vocal talents to the recording, taking advantage of this burst of creativity and camaraderie to record her New Year greetings for 2025. The Because We Care video has been subtitled into 22 languages to make sure its powerful message will be heard around the world. It is currently available on YouTube and the audio can be downloaded from the main streaming platforms (Spotify, Deezer and Apple Music). A making-of the video is also available on YouTube, providing a behind-the-scenes look at this wonderful, warm-hearted project.

Watch the music video

Watch the making-of

"Thanks to the entire Veolia team for the incredible commitment and passion that brought this beautiful initiative to life."

Estelle Brachlianoff
Chief Executive Officer of Veolia

KEY FIGURES

over 200,000 views
(YouTube and LinkedIn)

over 70 applicants

over 300 comments
(YouTube and LinkedIn)

No. 1 most viewed of all corporate videos

subtitles available in 22 languages

"The mission of ecological transformation is not just a technical problem for engineers, but a human problem that can only be solved with every aspect of effort and creativity, including a project like this one."

Tim McDougald
Canada

"I have been a flamenco guitarist since I was little, and when I received the news of the possibility of participating in the project, I started recording the demo that same afternoon!"

Carmelo Luis Rando Ortiz
Spain

"This musical project filled me with pride, as the song is a reminder that our actions make a difference on our planet."

Diego Santos de Araújo
Brazil

"Using my passion for a great cause by promoting Veolia Cares? Absolutely, count me in!"

Ghita El Bkem
France

VEOLIA CARES: A UNIQUE WORLDWIDE SOCIAL PROTECTION PROGRAM

Inspired by the Group's 170-year history, this unique musical experience is a perfect illustration of the spirit behind the Veolia Cares program, championed by Estelle Brachlianoff and rolled out in 2023 in every part of the world where the Group operates. Veolia Cares is a worldwide social protection program launched by Veolia in 2023 for the benefit of all the Group's 213,000 employees. An initiative set in place by CEO Estelle Brachlianoff, it guarantees a baseline level of social protection in every part of the world, even where there is no legal provision for it. Unprecedented in its scope and scale, the program gives every employee the right to parental leave, health coverage and death benefit, support for employees who are also caregivers, and an annual day off to volunteer with a social or environmental protection non-profit.

"I have been performing publicly as a singer from an early age. I could use my greatest hobby as part of my job and at the same time contribute to a good cause. This project was an amazing experience for me."

Sárka Fidrantová
Czech Republic

"From the moment we met, our group of ten strangers, along with the incredibly talented production team, bonded as if we'd been collaborating for years."

Leanne Monaghan
United States

"Corporate decided to do this project internally instead of outsourcing it – which demonstrates that they love to grant opportunities to employees to showcase all their gifts."

Sabina Santos
United States

"I like poetry, I like rap, and of course I like Veolia. So when I got the chance to apply, I didn't hesitate to take part in this adventure that helps spread our company's values."

Filip Brož
Czech Republic

"This experience reinforced the impact we can have as a company when we're united by a common purpose."

Rajasree Nair
Qatar

"Veolia gave us a wonderful gift by allowing us to participate in this beautiful adventure, full of meaning, with a powerful message."

Sophie Poumeroulie
France

1 CLICK = €1 FOR THE NGO DOCTORS WITHOUT BORDERS, SUPPORTED BY THE VEOLIA FOUNDATION

Much more than simply a song, Because We Care has triggered a real wave of optimism and commitment: each time someone listens to it, Doctors Without Borders receives a donation, an initiative that has collected more than 15,000 euros since the song was released. This surge of solidarity reflects Veolia's drive to embed social responsibility into its corporate culture by actively involving all its employees in real-world actions. These actions make a tangible difference and provide an outstanding demonstration of Veolia's social commitment, where music becomes a powerful vehicle for positive change.

How can we steer a new course toward an ecology that protects?

© ALEXEY SEAFARER

With Heïdi Sevestre

Glaciologist and member of one of the Arctic Council's working groups

© RAGNHILD UTNE

“I’ve tried to humanize science by speaking to the heart rather than the head. Glaciers contain the history of humanity. Their change forces us to confront the ephemeral nature of life and our own time on earth. By protecting them, we are protecting a part of our history and what is most fundamental to us.”

Heïdi Sevestre

As the effects of climate disruption accelerate, with particularly visible impacts in polar regions, there has never been a more urgent need for coordinated action by all sections of society. In this interview, Heïdi Sevestre, glaciologist and member of the Arctic Council, talks to us about the climate transformations happening today and their impact on our ecosystems. She shares her vision of an ecology that protects and calls for all actors — scientists, businesses and private individuals — to take urgent action to protect our shared future.

Heïdi, as a glaciologist, you must be witnessing the core focus of your work literally melting away before your eyes because of the effects of climate disruption. How does that feel?

Heïdi Sevestre: I’m a scientist, as you’ve just emphasized, so my number one duty is to observe. To observe, analyze, and calculate. It’s not easy to witness the alteration and inevitable disappearance of glaciers, which are the central focus of my research. But, as a woman scientist and a human being, I cannot look away. I definitely do feel an immense sense of sadness. I know that the disappearance of glaciers means the end of planetary and atmospheric stability, the end of the gentle rhythm of one season following the next, the end of the future that our parents looked forward to. But I never allow myself to be driven by fear or despair. We have to snap out of it, pick ourselves up, and start taking action. I often tell my students at the Svalbard University Centre in Norway that being a scientist today is about showing there is still hope, that it’s not too late, that we have to fight for every tenth of a degree that can be avoided. There is a responsibility that comes with being a scientist. As glaciologists, not only are we on the frontline of climate disruption, sometimes risking our lives, our role is also to pass on knowledge, the key to understanding that will motivate people to take action.

How does a phenomenon taking place at the top of the world, somewhere that seems so far away, have a real-world impact on our societies and daily lives?

H. S.: Glaciers are the earth’s water reserves, the most remarkable natural water towers imaginable. This means their disappearance has direct and very concrete impacts on our daily lives. For example, we don’t often hear about the link between melting polar ice and the price of food commodities, but there is one. A drop in the volume of water flowing into rivers and groundwater, making less water available for farming, results in higher prices for food. And although melting polar ice caps in Greenland and the Antarctic are a long way from inhabited regions, they contribute to rising sea levels, leading to hundreds of millions of climate refugees around the world. Ice that is seemingly so far away is in fact central to our ecosystem and daily lives. Preventing it from disappearing will also protect our lifestyles and everyday lives.

For years, scientists have been raising the alarm about the impact of climate disruption on our ecosystems. How has your research been received, and in what way does it encourage urgent, coordinated action?

H. S.: What I’ve encountered over the years is not necessarily skepticism or denial but more like widespread indifference. Even the best-informed people can underestimate the gravity, speed, and scale of the changes underway. What’s more, our digital models have largely failed to take sufficient account of the impact of climate disruption. As scientists, we tend to think of ourselves as being engaged with the long term. But now all of a sudden, we’re finding ourselves in a race against time. Not one single glaciologist was prepared, and neither was humanity. So how can we break through this layer of apathy? By raising awareness with storytelling rooted in shared values rather than with graphs and statistics. This is what I’m trying to do in my own humble way in my latest book *Sentinelle du climat* [Climate Sentinel], by sharing my passion for glaciers and the urgent need to take action.

In your book, you talk a lot about taking action. In general terms, what practical means of action are available to us to participate in this transformation?

H. S.: There are some extraordinary means of action available to us for protecting our future. But nothing can work without basic levels of education and scientific knowledge, which remains hard for many to access. We have to be unstinting in our efforts to pass on that knowledge. And our politicians have to grasp the urgency of the situation we find ourselves in. The keyword here is commitment. It's a powerful word, telling us it's time to devote ourselves to real-world initiatives. It is true that the financial crisis means many people's priorities and preoccupations center more on day-to-day challenges: a roof over their heads, eating three meals a day, enjoying their share of love and happiness. These are all non-negotiable essentials. But they are now under threat from biodiversity erosion and the climate crisis. We have to make sure that they remain the absolute priority and fight to protect them every day. This is exactly what an ecology that protects is all about!

What possibilities are there for boosting collaboration between the worlds of science and business?

H. S.: The ties between fundamental research and industry can be incredibly powerful. But in some countries, we are still seeing a certain lack of understanding – sometimes even mistrust – between these two sectors. Working together in a solid, long-term relationship would actually enable us to develop a powerful lever for taking action. As scientists, we know how to collect and analyze data that allow businesses to form a view and anticipate changes, while businesses can offer invaluable operational know-how. In the Arctic, where I've been lucky enough to work, there are a large number of partnerships in place between fundamental research and the private sector. This beneficial collaboration helps us accelerate our work in such a crucial domain. Science sometimes doesn't work fast enough to keep pace with changes. And this is where the business world can bring its reactivity and ability to shift to an industrial scale.

How would you define the new way forward that you refer to, a path that reconciles development with protecting the environment?

H. S.: The subject of climate change raises other issues that are hard for people to accept because they are synonymous with effort and sacrifice: decarbonization, degrowth, sufficiency. But this is not what action is about. The purpose of ecology – meaning actions taken to preserve our environment – is to protect. The idea is not to choose between quality of life or the environment, but, on the contrary, to preserve our environment in order to preserve our quality of life and our future. We are at an incredibly exciting moment in history. In my book, I tell the story of Hilde and Sunniva, two women who decided to leave everything behind in an attempt to find a new path, another way of living. They looked at what made sense to them – their relationship with nature – and refocused on the essentials. They found a new way forward, one that doesn't involve suffering or giving things up but instead resembles who they truly are, allowing them to enjoy life without impacting the planet. They have, in their own way, taken action.

What role can a business like Veolia play alongside scientists in this shared search for an ecology that protects?

H. S.: Businesses have access to some incredible means of action for combating climate change and the destruction of the living world. It took me a while to realize this. In my work for the Arctic Council, I provide governments with the scientific data and analyses they need to formulate plans for the long term. This is my number one priority. Major businesses, on the other hand, are able to act quickly, backed by operational expertise and the ability to deliver real-world innovations. When I'm out on the glaciers, in regions that are warming rapidly – not two or three times faster but six to seven times faster than the rest of the planet – it sometimes feels like I've stepped into the future. But it's crystal clear that we will never manage without large groups like Veolia. It is up to us scientists, who can be very distanced from the private sector, to develop far closer ties with it and understand how to make the most of what the private sector can offer.

Do you have a hopeful message about the future that you would like people to hear?

H. S.: It's not too late! We need everybody in all their diversity, with all their experience and qualities, to help us invent a better future. Present-day science bears this out: it isn't too late to help us protect our glaciers. I'd like to invite everybody to take part in this fabulous adventure as we map out a new way forward! ◗

Since 1996, the Arctic Council membership has comprised the eight Arctic states (Canada, Denmark, via its sovereignty over Greenland, the USA, Finland, Iceland, Norway, Russia and Sweden), representatives of the region's six indigenous peoples' organizations, as well as observer groups including thirteen non-Arctic states, France among them, that participate in the council's working groups. This intergovernmental forum works together on shared issues, including how to protect the environment. Only the Arctic states have decision-making authority, with the presidency rotating between them every two years. After Norway in 2023-2025, Denmark has the presidency for the years 2025 to 2027.

2024 Environmental Book Award: Heïdi Sevestre honored for her exploration of glaciers

French glaciologist Heïdi Sevestre recently won the Veolia Foundation's 2024 Environmental Book Award for her book *Sentinelle du climat* [Climate Sentinel], published by Harper Collins. In this book, the author guides us on an eye-opening voyage through the world's glacial regions, from the Arctic to Greenland, Antarctica to the Himalayas. As she explains, her unique approach consists in humanizing science, speaking to the heart rather than the head. Driven by her passion for these ice giants, her initial amazement turns to deep concern over how fast they are melting, a visible consequence of global warming.

Heïdi Sevestre hopes that her book will alert the public and policymakers to the urgent need to act now to halt climate disruption. She maintains that "to save the glaciers is to save ourselves." Heïdi Sevestre is a member of the International Explorers Club and recipient of the prestigious Shackleton Medal for her commitment to protecting the polar regions. She plays a big role in helping people understand and be aware of contemporary climate challenges. Her message is clear: saving the glaciers is inextricably linked to the survival of humanity.

The Environmental Book Award has been running since 2006 and will celebrate its 20th edition this year. It honors outstanding works that help raise public awareness about major environmental issues. The jury chose Heïdi Sevestre's powerful and captivating story that skillfully combines scientific rigor with ecological engagement. The award ceremony was held on September 14, 2024 at the *Le livre sur la Place* book fair in the French city of Nancy, in the presence of jury chair Bruno David, former president of the National Museum of Natural History.

#WeAreResourcers

The showcase of our talented line-up has come to an end. We launched our Resourcers To Turn the Tide campaign in 2022. Since then, thirteen colleagues from around the world have shared their experiences, telling us about their jobs, their goals, and, most of all, their enthusiasm for the role they play in resourcing the world. The final act for the series of portraits features a truly international group photo.

Read all their stories

Dorottya
Hungary - Oroszlány

Viktor
Germany - Braunschweig

Greener cities through greener energy.

Ariska
Indonesia - Surabaya

Water is far too precious not to recycle.

Michelle
United States - Los Angeles

Florian
France - Angers

Fabrizio
Italy - Udine

María José
Colombia - Barranquilla

Romain
France - Marignane

Fatima
France - Metz

Colin
Australia - Sydney

Marta
Spain - Barcelona

Anas
Jordan - As Samra

Océane
France - Nantes

From sanitation to hazardous waste: a history marked by technological innovations

Waste management has changed radically on its journey from the filthy streets of the 19th century to the environmental challenges of today. Veolia has supported, and often anticipated, the technological, social and regulatory changes that have marked every stage of this journey, delivering innovations that answer the growing needs of local authorities and industries. Today, the Group is the leader in hazardous waste thanks to the know-how it has developed in treating waste that has become increasingly complex over the years.

Late 19th century
Squalid cities

Late 19th century
Towns and cities face a public health crisis on an unprecedented scale, as filthy streets and no organized management of solid or liquid waste, including sewage, lead to devastating epidemics. This heralds a revolution in public health and sanitation: the first sewers are built, and the first waste collections organized. It also marks the birth of Veolia.

Early 20th century
Industrialization brings far-reaching changes to the urban environment and types of waste. As well as conventional household waste there is now a growing volume of chemical, mineral and metal waste. As towns and cities grow, so does the amount of waste they produce. Veolia is at the forefront of this transformation, helping towns and cities modernize by developing the first incinerators and organizing the now-essential sorting of this diverse range of solid and liquid waste.

Early 20th century
Industrialization

1950s - 1990s
The growth of cities and the rise of the chemical industry generate new types of pollution, such as solvents, hydrocarbons, and pharmaceutical residues. Protecting water resources becomes a critical challenge to secure supplies and safeguard public health. Veolia continues to innovate to guarantee safe, quality water by developing technologies that treat and control toxicity. It introduces ultra-high-temperature incinerators and fits hazardous waste landfill sites sophisticated sealing systems to protect public health and the environment. The Group's expertise, built up over a century and more, is the catalyst and cornerstone for developing cutting-edge technologies to treat hazardous waste.

1950s - 1990s
Modernization

1990s - 2020s
Complex challenges

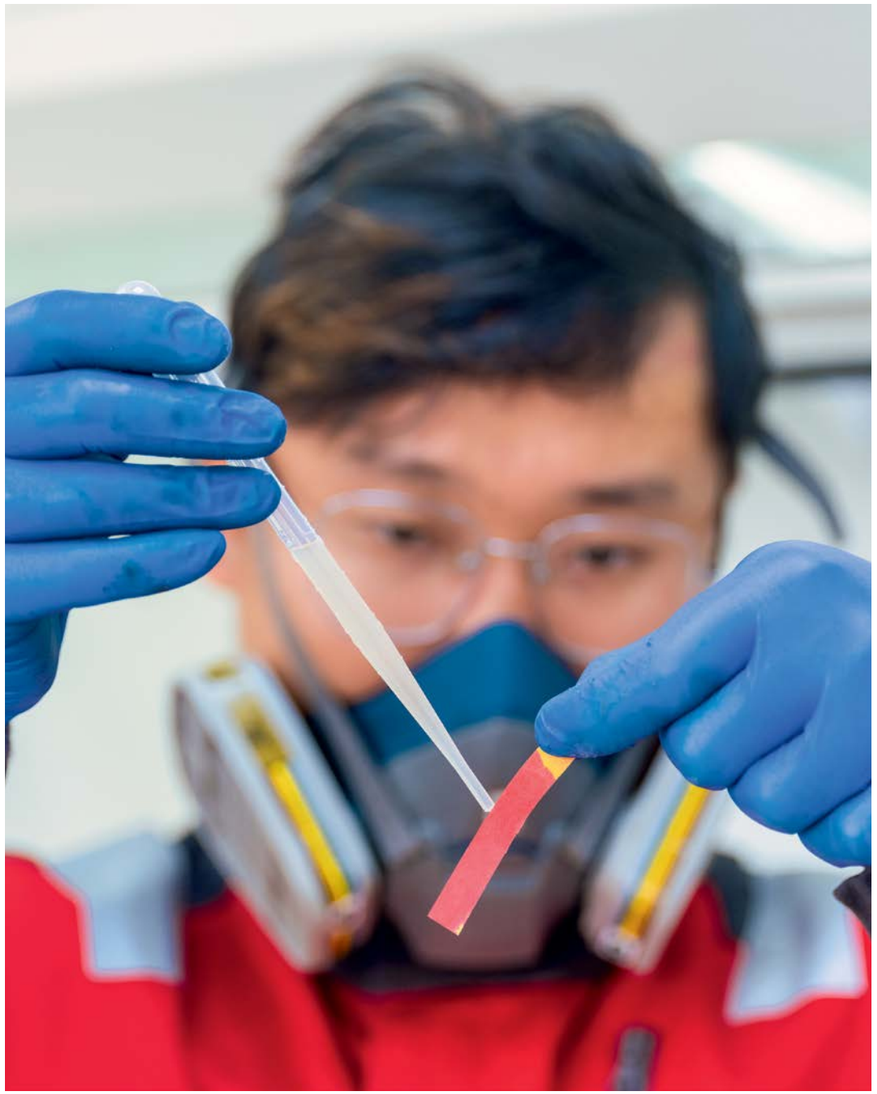
1990s – 2020s
Climate breakdown and greater environmental awareness turn waste into resources. A revolution is underway and Veolia meets the latest technological challenge by rolling out highly automated ultra-modern waste sorting centers on a large scale and developing technologies to treat waste that is increasingly hazardous and toxic, guided by strict environmental standards.

Present day
Today, we are confronted by new challenges: PFAS in everyday items, invisible but omnipresent microplastics, and the proliferation of electric batteries. Faced with these challenges, Veolia continues to innovate. Veolia is embedding artificial intelligence into its processes, developing advanced filtration solutions, and optimizing recycling for new types of waste This high-technology expertise is now strategically important in terms of public health and regional reindustrialization. In this field, Veolia, with its century-long experience in waste management, is the world leader.

Present day
Public health as a driver

Waste to value

SOLUTIONS



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Waste management: a public health and industrial imperative

Over the past 50 years, Veolia has established itself as the leader in hazardous waste management services worldwide, developing extensive expertise in this field. At a time when the sustainable management of this class of waste is becoming a pivotal issue for human health, environmental protection and regional reindustrialization, let's dive into the global leader's hazardous waste management strategy.

Key figures

#1 worldwide
in hazardous waste

30 countries
where Veolia treats waste

300+
hazardous waste processing facilities

8.3M metric tons
of hazardous waste treated in 2024

Issue at stake

Protect people's health and the environment from harmful substances contained in a wide array of waste generated primarily by industry.

Objective

Support hazardous waste producers worldwide in a sustainable and value-providing way.

Veolia's solution

Deploy innovative solutions that are safe, compliant and traceable as part of end-to-end services tailored to each customer's needs.

A historical perspective on hazardous waste regulations

The 1970s marked the beginning of hazardous waste regulation, introducing basic treatment requirements before landfill disposal. Two major industrial catastrophes shaped subsequent regulatory frameworks: the 1976 Seveso dioxin release (Italy) and the 1984 Bhopal pesticide plant disaster (India). These events were the catalyst for comprehensive regulations focusing on both industrial safety and hazardous waste management. Each new regulation spurred technological innovations across the waste management spectrum, from initial waste characterization to final containment solutions. As the 21st century dawned, the rise of sustainable development and circular economy principles transformed the approach to hazardous waste management. This shift toward prevention-focused strategies has seen significant contributions from industry leaders like Veolia.

Digital innovation in hazardous waste management

Veolia has implemented cutting-edge digital technologies across its environmental operations to manage complex processes, including pharmaceutical, petrochemical and nuclear waste treatment. Originally developed for water operations and later adapted for hazardous waste treatment, the company's Hermod technology exemplifies this digital transformation. This sophisticated monitoring system collects data from sensors throughout facilities, enabling automated analysis and enhanced operational control. The technology has proven particularly effective in incineration line monitoring, where it can detect unwanted air intakes and optimize waste loads, potentially increasing treatment capacity by 15-20%. Currently being tested in France and North America, Hermod also allows for precise adjustments of operational parameters, reagent usage and ash content, demonstrating Veolia's commitment to technological innovation and synergies across its water, waste and energy activities.

[redacted]n today's world, ecological transformation has become imperative for building a sustainable future. Veolia's vision encompasses an integrated and combined approach to water, energy and waste management. This holistic strategy is central to the GreenUp 24-27 strategic program, which aims to accelerate ecological transformation by rolling out affordable, replicable solutions that decarbonize, depollute and regenerate our resources.

Hazardous waste management stands as a critical component in this transformation. As industries expand, treating and recovering liquid and hazardous waste has become a necessary condition to ensure public health, industries' license to operate and industrial growth while preserving natural resources. From petrochemicals to pharmaceuticals, electronics to healthcare, the volume of hazardous waste continues to grow, reaching 350 million metric tons globally in 2023, driven by evolving global legislation and ever greater industrial activity. With over 50 years' expertise in treating and handling hazardous waste worldwide, Veolia is the global leader in hazardous waste treatment with unrivalled experience in various types of complex waste, from refining and chemical production, medical and pharmaceutical waste, to rare materials found in end-of-life electronic equipment and lithium batteries (automotive sector). Particularly active in Europe, Asia, the Middle East and North America, the Group draws on a network of 300 sites in 29 countries, where it deploys some 18,000 employees in dedicated teams.

> **"When it comes to hazardous waste, we are committed to doing the right thing for our customers, employees and communities."**
>
> **Bob Cappadona**

RESILIENT AND AGILE

Veolia's approach combines innovation, resilience and sustainable practices. This was highlighted during the COVID-19 pandemic when the company maintained its workforce while competitors downsized, enabling a rapid response to market recovery. "In February 2020, Veolia acquired the Gum Springs facility in Arkansas to construct a state-of-the-art 100-kT hazardous waste incinerator. This acquisition coincided with the COVID pandemic in 2020, forcing us to adapt and review our operations," explains Bob Cappadona, President and CEO of Environmental Solutions and Services at Veolia North America. "Whereas many of our competitors shed their employees, at Veolia we did everything in our power to keep the team together. Our hazardous waste activity rapidly took off during the pandemic, meaning the volume of material coming through our network reached record levels and, fortunately, we had the team to respond to it, as well as the technologies and know-how." Bob Cappadona's words illustrate one of Veolia's core qualities: resilience.

Veolia's extensive treatment capabilities and nationwide presence put the company in an advantageous position as the US government promotes industrial reshoring initiatives. The company's decentralized structure allows swift local adaptability to customer needs, as evidenced in their engagement with Taiwan Semiconductor Manufacturing Company (TSMC) in Arizona. Veolia showcased its comprehensive solutions there, ranging from fundamental services to sophisticated sulphureous gas treatment processes. "At Veolia, our culture is to start from day-to-day service and think of the next generation, of how to do better. This is something people are proud of and that sets us apart," Bob Cappadona points out.

PROACTIVE AND INNOVATIVE

To "think of the next generation," Veolia ceaselessly innovates at different levels. Veolia's technological innovation strategy seamlessly integrates digital transformation with advanced treatment solutions, positioning the Group at the forefront of global hazardous waste management. At the core of this approach lies the Hermod system, a sophisticated digital monitoring platform initially developed for water operations and successfully adapted for waste treatment facilities. This technology exemplifies Veolia's cross-sector synergy, enabling automated analysis and increasing processing capacity by up to 20% through precise control of operational parameters. In the United States, Veolia draws on 30 years' experience of hazardous waste incineration in its Port Arthur facility (Texas), implementing MasterChef, an AI-based program aimed at optimizing the hazardous waste mix fed to its incinerator. "Today, we use operators to plan the feeding, and we use AI to evaluate how they are doing. At some point, AI could take the lead, and our operators will track what AI is doing," explains Bob Cappadona, "At an asset such as Port Arthur, which is over 45 years old, being able to increase capacity without capital investment through programs like MasterChef is a fantastic contributor to our business performance."

At the same time, the Group is conducting R&D programs on innovative solutions for treating waste that contains sulfur, capturing fluorinated gases to reduce greenhouse gas emissions, and extracting per- and polyfluoroalkyl substances (PFAS). Veolia is working on decontamination and extraction solutions for these dangerous compounds contained, for example, in fire-fighting foams. "Thanks to technological research, our aim is to have a full-service solution for PFAS management. In the United States, we've done a lot of tests with regulators to show that our solutions are scientifically proven and fully EPA1-compliant," Bob Cappadona continues.

Digital innovation also encompasses support for groundbreaking treatment technologies, notably the GeoMelt® vitrification process, which transforms hazardous nuclear materials into ultra-stable glass matrices at facilities in both Andrews (Texas) and Sellafield (United Kingdom). Creating material ten times stronger than concrete, this technology underscores Veolia's ability to develop long-term solutions for complex waste challenges. The Group's innovative attitude can equally be seen in its comprehensive battery recycling program. A five-stage process, operated through SARPI, Veolia's French subsidiary specialized in hazardous waste and batteries, addresses the growing challenge of electric vehicle battery waste. In urban environments, Veolia's technological expertise is displayed in projects like the Santa Giulia district transformation in Milan, where advanced soil remediation techniques are being applied to clean 1.2 million m³ of contaminated soil, and the Grand Paris Express project, handling 45 million metric tons of construction spoil through innovative treatment processes. In addition, Veolia's medical waste management solutions, expanded through strategic acquisitions across South America and Europe, further showcase its ability to adapt and implement specialized treatment technologies for diverse waste streams.

This holistic view of innovation, combining digital capabilities with advanced treatment technologies, enables Veolia to address complex environmental issues while promoting circular economy principles and sustainable resource management across its global operations. Veolia's approach is fundamentally driven by addressing real-world customer challenges, developing practical and effective solutions that respond directly to industrial and municipal needs. Rather than following partisan agendas, the Group focuses on delivering tangible results through concrete projects that create measurable value for clients, while ensuring environmental compliance and sustainable outcomes. This customer-centric strategy underlines Veolia's commitment to providing pragmatic solutions based on concrete market demands.

VALUE-ADDING, END-TO-END SOLUTIONS

The Group's integrated approach emphasizes safety, compliance and customer service, supported by a decentralized structure that enables quick adaptation to local needs while maintaining global standards. "Our teams focus on those hazardous waste materials that are most difficult to manage. For example, we are the only company in the US that can manage dioxin through our Port Arthur incinerator. This is why people used to say we are managing 'high-end' hazardous waste," says Bob Cappadona.

In the Middle East, the MAGMA[1] plants, owned by ADNOC,[2] represent a major breakthrough in the hazardous waste treatment sector, particularly with the establishment of the world's first NORM treatment facility. Veolia operates plants processing liquid, sludge and solid hazardous waste with an impressive annual capacity of 70,000 metric tons, as well as a unique facility specialized in treating Naturally Occurring Radioactive Materials (NORM) from oil operations. This dual expertise, combined with innovative financial solutions such as project financing in the Middle East, positions MAGMA as an undisputed leader in sustainable hazardous waste management, combining operational excellence, environmental responsibility and maximum safety standards. Through its global network enabling knowledge sharing and comprehensive solutions for multinational clients, Veolia demonstrates that effective hazardous waste management requires high technical expertise and the capacity to anticipate emerging solutions and regulations, along with a commitment to environmental stewardship and customer service. This holistic approach has established Veolia as a trusted partner in protecting both human health and the environment while driving sustainable industrial growth and ecological transformation.

Thanks to community and knowledge sharing, training and talent pool programs, plus young talent mentoring by Group "experts," Veolia has proven its ability to act as a global leader with a truly global network. "If we have a customer in New York in the semiconductor business that has sites in China, France, the UK, etc., we are able to develop a genuinely global solution, whatever their local waste management needs. Veolia's teams work behind the scenes and on the frontline to present a 'One Veolia face' to the customer," explains Bob Cappadona. The Group treasures this sense of belonging and commitment as one of the most powerful drivers for its successful expansion on the hazardous waste market.

Looking ahead, Veolia is continuing to strengthen its position through strategic acquisitions and technological innovation. Veolia's commitment to environmental protection extends beyond mere compliance, focusing on developing innovative solutions for emerging challenges. The company's integrated approach to waste management, combining local expertise with global capabilities, positions it as a leader in ecological transformation worldwide, shaping a desirable future. ◗

1. ADNOC: Abu Dhabi National Oil Company
2. NORM: Naturally Occurring Radioactive Materials

"By controlling the complete hazardous waste treatment cycle, Veolia's solutions limit the environmental impacts of industrial activities, avoid the dispersion of pollution into the environment and promote the circular economy."

Benjamin Chan-Piu

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CIRCULAR ECONOMY

Solid waste: toward an innovative ecological transformation

In the face of mounting environmental challenges and the emergence of new technologies, the solid waste management industry is undergoing an unprecedented transformation. Veolia is a major player in this fast-changing environment, providing expertise and innovative solutions to local authorities and manufacturers. Veolia supports its customers in their environmental transition by developing custom approaches that combine cost effectiveness with protecting health and the environment.

Key figures

2.3
billion metric tons:
amount of municipal solid waste produced worldwide in 2023

7,800
industrial sites
fitted with Mistral's conversational AI

19%
portion of solid waste properly sorted, recycled and/or composted worldwide

88%
of materials consumed in Europe come from virgin resources

Issue at stake

Redesign the solid waste cycle to create a sustainable and desirable future in which waste becomes a resource.

Objective

Work with local authorities and manufacturers to create a viable and sustainable circular economy for solid waste.

Veolia's solution

Provide innovative, real-world solutions at every stage of the value chain, from waste generation to waste recovery, reflecting the challenges that each customer faces.

Veolia and Mistral AI create tomorrow's conversational factory

February 2025 saw Veolia and Mistral AI announce a revolutionary strategic partnership for using generative artificial intelligence to help manage industrial sites. In a world first, the new partnership will make it possible to converse directly with industrial installations by integrating Mistral LLM with Veolia's data and knowledge base. Rolled out at over 7,800 sites (drinking water plants, waste treatment facilities, and energy production plants), this innovation marks the emergence of Industry 5.0 by enabling operators to interact with their installations using natural language. This project supports the goals of Veolia's GreenUp program by pairing the Group's century-old resource management expertise with Mistral AI's advanced sovereign technology.
A combination that opens the door to a new era of operational efficiency and transparency in industrial site management, as well as boosting safety and environmental performance.

Veolia and Faurecia reinvent sustainable automotive cabins

In May 2022, Faurecia, a FORVIA group company, and Veolia joined forces to revolutionize the automotive industry by developing innovative components for vehicle cabins. The partners set themselves the ambitious target of reaching an average of 30% recycled content as of 2025. In 2023, Veolia began producing secondary raw materials at its French sites for use in manufacturing instrument panels, door panels and central consoles. This strategic tie-up combines Veolia's recycling know-how with Faurecia's technological leadership in automotive components. The project responds to a key target for both partners: Veolia aims to reach a billion-euro turnover in plastics recycling in 2025, while Faurecia's goal is to accelerate its transition to carbon neutrality. A collaboration that illustrates how a shared innovation can help the automobile industry's drive for greater sustainability.

The amount of municipal, commercial and industrial non-hazardous solid waste generated globally has soared since the early 20th century, driven by the combined effects of population growth and increasing consumption. A UN report estimated that the world generated around 2.3 billion metric tons of municipal solid waste in 2023, with projections indicating this figure will rise to 3.8 billion by 2050. According to the World Bank, currently just 19% of solid waste is appropriately sorted, recycled and/or composted, with the remainder liable to pollute land, water and the atmosphere with heavy metals or toxic gases. Plastic waste is a major challenge, particularly in terms of public health, since it breaks down very slowly and causes environmental contamination. In response to this issue, Veolia is rolling out a new generation of treatment plants designed to handle large volumes and maximize recovery. Smart sorting centers fitted with state-of-the-art technologies allow each unit to process very large tonnages while also producing high-grade recycled materials. In addition, the Group is developing innovative logistical solutions for optimizing collection and transport that are shrinking the carbon footprint of its activities — one of the targets of its GreenUp 24-27 strategic program.

A GLOBAL STRATEGY TO TACKLE A MAJOR CHALLENGE

Managing solid waste produced by households, local authorities and businesses is a universal problem, but the challenges it involves vary in different parts of the world. Éric Trodoux, Senior Vice President, Solid Waste Recycling & Recovery at Veolia Group, explains: "In northern Europe, for instance, waste is no longer sent to landfill, and we are already seeing a fall in energy recovery with a corresponding rise in material recycling. Veolia's strategy in these countries is to support a transition which, in the case of plastics for example, means shifting from a volume-based approach aiming for average-quality products to a focus on expertise designed to produce upward of 200 different recycled products. In Latin America, unregulated dumps are evolving to become landfill sites for non-hazardous waste. Our strategy in this part of the world is to invest massively in centers designed to protect the environment, for example, by recovering biogas generated from landfilled waste."

Given this diverse context, the key is to offer solid waste producers solutions that align most closely with their challenges and each market's level of maturity, particularly in terms of legislation. This demands a global vision of the life cycle of the materials concerned, coupled with the capacity to transpose best practices and feedback from country to country, site to site, rooted in an approach that remains local, regional and personalized.

This vision and capacity lie at the heart of Veolia's GreenUp strategic program, designed to ramp up the rollout of real-world, affordable and replicable solutions for depolluting, decarbonizing, and regenerating resources in the period from 2024 to 2027.

> **"Every customer has specific needs. Our strength lies in our ability to combine our technical expertise with a tailored approach to develop innovative solutions suitable for every situation."**
>
> **Éric Trodoux**

INNOVATING TO OPTIMIZE PLANTS AND FACILITIES

The implementation of cutting-edge technologies for both collecting and processing waste delivers a boost to safety, reliability and productivity in our activities. Digital innovation and artificial intelligence are central to Veolia's strategy. Artificial intelligence is fast becoming an essential transformative tool in the revolution sweeping the solid waste sector. Veolia is rolling out an ambitious two-stage strategy: by 2030, the goal is to have fully modeled the entire value chain, incorporating AI systems to analyze streams in real time, anticipate the operational impacts, track carbon, and develop integrated

models. In the shorter term, the 2024-2027 period, the Group will focus its efforts on key areas: incineration assisted by Hermod software, methanization to optimize processes, and managing methane (CH_4) at landfill sites. Innovations in recycling focus less on technologies than on developing viable economic models and creating a market for recycled materials independent of the virgin material, in order to usher in a new era of industrial efficiency and low-carbon management. Smart technologies, including the Internet of Things (IoT), sensors to optimize collections, optical sorting systems using artificial intelligence, automated sorting robots, and digital traceability platforms, are radically transforming how waste is managed. These solutions deliver significant improvements to operational performance while also reducing costs. Real-time data can be used to fine-tune waste management strategies and anticipate future requirements. Fitting surveillance cameras to tipper trucks, for example, helps avoid accidents with other road users during collection rounds and makes it possible to check the contents of each bin to identify the presence of plastic, glass, card and metal mixed in with non-recyclable waste. At waste treatment centers, using IoT and AI to manage installations helps to optimize operations. Hermod software is used to model incineration processes, helping operators detect operational abnormalities such as air leaks or excess energy consumption, as well as to ensure safety and monitor data from every part of the plant. Digital solutions rolled out as part of Hubgrade by Veolia use AI to optimize data analysis and installation supervision and control. Predictive maintenance using big data analysis is revolutionizing how installations are managed. Algorithms developed by Veolia detect anomalies before they have an impact, optimizing equipment availability and reducing maintenance costs. This proactive approach also improves safety and environmental performance at installations.

INNOVATING TO BOOST THE CIRCULAR ECONOMY

Achieving a successful ecological transformation is a major challenge facing local authorities, manufacturers and the services sector. Veolia has put in place a series of innovative solutions they can rely on to help them meet their targets for decarbonization, depollution and resource regeneration. In the face of growing resource scarcity and climate breakdown, Veolia strongly believes that the only path to a sustainable future for the generations to come lies in inventing circular economy models. The Group enacts this vision in three key areas: complete material recycling (from eco-design to reincorporation into industrial processes); soil regeneration thanks to organic material recovery, which helps improve water and carbon retention and boost biodiversity and productiveness; and shifting energy models to the use of renewable and local solutions. As part of this commitment, the Group focuses on the use of solid recovered fuels, an environmentally friendly and cost-effective alternative to fossil fuels such as coal and lignite that also helps cut the volume of waste sent to landfill. The Group is concentrating on capturing CO_2 at waste-to-energy plants that help regions and industrial companies on the path to carbon neutrality, with upcoming pilot industrial plants in France and the USA. In addition, Veolia is developing advanced solutions for recovering energy from non-recyclable waste.

The latest generation of waste-to-energy plants offers outstanding energy yields, producing electricity and heat for injection into district heating networks or use by local manufacturers. And all while remaining fully committed to the Group's original mission: cleaning up, depolluting and reducing the volume of residual waste. These installations incorporate advanced systems for treating flue gases and recovering energy, minimizing their environmental impact while maximizing their energy efficiency. A further illustration of the commitment to circularity is the support provided to manufacturers in embracing eco-design principles that make it easier to recycle used products and produce alternative resources worth more than the virgin material, as is already the case with plastic bottles made from PET and HDPE.[1] "When we innovate in waste management, we are investing in regional resilience by rethinking the entire value chain, breaking down silos between manufacturers, municipalities, authorities and operators, and transforming how we act across the entire product life cycle to build a truly circular economy," explains Eric Trodoux. Veolia has developed recycling technologies that mean it is now possible to handle increasingly complex materials. The Group has perfected innovative processes for recycling rare and non-ferrous metals found in electronics, incineration residues and even composite materials. These solutions play a part in preserving natural resources while simultaneously creating value for customers, encouraging eco-design and greater economic circularity. "Today we are in a position to extract a major portion of the strategic metals present in certain types of electronic waste. This is the fruit of many years' research and innovation in our treatment processes," adds Eric Trodoux.

TECHNOLOGICAL MATURITY AND EUROPEAN EXCELLENCE

Europe is very much the world's leading laboratory for waste treatment innovation. Veolia operates best-in-class facilities in Europe, particularly in Belgium and northern Europe, where recycling is at record levels. Ultra-modern sorting plants combine advanced technologies with human expertise to maximize waste recovery. The Group actively anticipates evolving regulations in Europe, particularly directives on waste reduction and the circular economy, by developing ever more efficient solutions.

In Asia, where rapid urban growth and industrial development pose major challenges, Veolia is rolling out solutions adapted to align with local contexts. It actively participates in the development of waste treatment facilities in major Asian cities, transferring

"When we innovate in waste management, we are investing in regional resilience by rethinking the entire value chain, breaking down silos between manufacturers, municipalities, authorities and operators, and transforming how we act across the entire product life cycle to build a truly circular economy."

Éric Trodoux

its know-how while remaining mindful of local realities. This international footprint also means the Group can share best practices and ramp up innovation on a global scale. Veolia benefits from robust, worldwide knowledge-management processes, centering on dynamic theme-based communities and a strong focus on learning from experience.

PROSPECTS FOR THE FUTURE

In the face of growing environmental challenges, Veolia is guided by an ambitious innovation strategy centered on a number of complementary areas. The Group is massively investing in R&D to anticipate future challenges, particularly surrounding the treatment of new types of waste such as end-of-life electric vehicle batteries and photovoltaic panels. In addition, it is actively developing new markets for recycled materials, creating long-term commercial outlets on the back of innovative recycling processes and strategic industrial partnerships. This approach relies on close collaboration with all the stakeholders in the value chain, from waste producers all the way to end users, as well as recyclers and regulators. Europe's circular economy remains underdeveloped, with a small proportion of materials used sourced from reuse and recycling, while 88% are from virgin sources (mines, forests and oil). As a key actor in ecological transition, Veolia has responded to this reality by working to accelerate development of the circular economy. This commitment is crucial to reaching climate targets, reducing reliance on virgin raw materials, and reinforcing European industrial autonomy.

OVERCOMING SILOS FOR A SUCCESSFUL CIRCULAR TRANSITION

The waste sector is currently structured around four main stakeholders: the manufacturers that produce it, local authorities that manage residents' waste, public authorities that regulate it, and management operators that treat it. Each group acts in line with their own priorities, restrictions and indicators. But these silos stifle innovation, increase costs, and make rolling out circular solutions needlessly complex. This paradigm has to shift. Careful and determined coordination between these four groups is the only way to align streams, incentives, norms and investments. Working together, rather than side by side, would make it possible to simplify regulatory overlaps, streamline controls, improve resource recovery and, above all, render the circular economy economically viable. Technology alone, AI in particular, is not enough. What is needed is shared circular governance focused on environmental and economic performance. As part of its efforts to promote this transformation, Veolia is investing significant sums to train its employees in emerging jobs in the recycling sector and the use of new technologies, as well as educating its customers and partners about the importance of the circular economy. This all-round strategy — a combination of technological innovations, creation of new markets, multi-stakeholder collaborations and upskilling — means Veolia is positioned to act as a driver in the transition toward more sustainable forms of resource management. All these priorities, delivered as part of the GreenUp program, converge to point the way toward a desirable and sustainable future.

1. Polyethylene terephthalate/high-density polyethylene

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MULTI-SKILLED EXPERTISE

Shaping the future of worldwide waste management

The pharmaceutical, electronics, petrochemical and agrochemical industries generate different types of waste, some of it posing risks to public health and the environment. As the global leader in hazardous waste management and treatment, Veolia tackles the technical, logistical and economic challenge of dealing with this very wide range of industrial residues. The Group combines its expertise in solid and hazardous waste treatment to provide a comprehensive approach to waste management. This approach delivers complete tailored solutions that meet the specific requirements of its customers around the world.

Key figures

Up to 9 %
of solid waste is classed as hazardous[1]

$640,3 billion:
estimated annual cost for managing solid waste in 2050 (versus $252 billion in 2020)

Up to 500 million:
metric tons of hazardous waste produced worldwide every year

861
waste treatment plants operated by Veolia

50+
years' expertise in hazardous waste treatment

1. Source: Environmental Science and Pollution Research, 2023.

Issue at stake

Treat ever-growing volumes of waste while optimizing solid waste recycling and ensuring that waste presenting a risk to public health and the environment is treated effectively and securely.

Objective

Promote circularity and decarbonization in carbon-emitting activities against a background of changing and increasingly severe regulations.

Veolia's solution

Roll out, coordinate and control an integrated activity that provides management/an integrated system for the management, treatment and recovery of hazardous and non-hazardous waste on behalf of our customers that aligns with their requirements.

Digital and AI: key resources across all business activities

Veolia makes extensive use of digital resources and AI to optimize waste treatment, just as it does in its other business activities—water and energy. At the start of the chain, automated collection and smart sorting processes for solid waste have proven their effectiveness in improving performance and working conditions and reducing the carbon impact of transport. In the hazardous waste sector, digital technologies are employed to optimize the logistics chain, and Veolia is developing decision support tools to help sort and group by compatibility a wide variety of waste from numerous sources. At incineration plants, teams running the installations use artificial intelligence to boost operational performance. Several sites operated by Veolia already harness AI's processing power to simulate and predict energy recovery curves, while advanced monitoring tools control atmospheric emissions generated by the combustion process. Innovations in the project pipeline include decision support solutions to adjust streams according to the characteristics of the incinerator and applications designed to reduce the carbon footprint of incineration.

Veolia and Sanofi R&D: an innovative partnership for integrated waste management

Veolia has provided overall waste management for Sanofi, the leading global pharmaceutical company, since 2016. The strategic collaboration aims to optimize waste management while also meeting Sanofi's ambitious environmental commitments. At the heart of the partnership is the Green Board, a dashboard developed by Veolia comprising 11 key performance indicators. The tool is used to track environmental goals accurately, make team training easier and improve operational reporting. It has proved so successful that it has now been rolled out internationally to locations including Singapore and Mexico. The partnership is particularly well developed in the USA, with Veolia North America offering a full range of services including treatment of medical, hazardous and low-level radioactive waste, as well as outsourced management of Sanofi's solid waste.

[redacted]

n 2024, Veolia treated 65 million metric tons of waste worldwide, including 8.7 million metric tons of hazardous waste. These constantly rising figures[1] underline the Group's dominant position across all categories of waste management and highlight its customers' growing need for fully integrated management of the waste that continues to be produced in ever greater quantities around the world. Over the decades, Veolia has successfully leveraged its expertise in water and energy to construct and consolidate its expertise in waste, from collection to treatment and recovery, including elimination of the most toxic types of waste. Veolia's track record speaks for itself: its hazardous waste activities, including soil decontamination, have been progressively structured over more than 50 years, since the passage of France's framework law on July 15, 1975.[2] The Group has applied its expertise in other regions of the world, building up an international network with specialist treatment facilities in Asia, the Middle East, the entire American continent and even Australia. In terms of solid waste, the Group also leads the way in the circular economy, offering a full line-up of recovery solutions for energy (biogas, heat and electricity) and materials, with yields in excess of 95%. PlastiLoop from Veolia, the fruit of over 30 years' experience in plastic recycling, provides a further demonstration of this performance. The international platform offers manufacturers keen to reduce their carbon footprint a range of recycled plastic resins they can use instead of virgin materials. This is a replicable, real-world solution for saving resources that leverages the know-how developed by the Group over the 20th century. It is designed to meet the most specific requirements and cover all or part of the value chain: collection, sorting, production and even contract manufacturing for automakers.

Veolia's mastery of hazardous waste management is a perfect illustration of the Group's strategic vision for protecting essential resources. Its globally recognized expertise is rooted in a core belief: that preserving water resources—Veolia's historical mission—requires an all-round approach that includes managing pollution at source. Because it was very early to identify the crucial link between water quality and the treatment of solid waste and hazardous industrial waste, Veolia developed one-of-a-kind expertise that now extends far beyond the initial focus on protecting water resources. The Group has used this pioneering approach to build a unique leadership position, particularly in the treatment of hazardous waste, which now covers all critical environmental challenges: soil decontamination, treating complex industrial waste and managing dangerous chemical substances. This ability to anticipate environmental challenges and develop integrated solutions highlights the strength of Veolia's model, transforming ecological challenges into opportunities for innovation and value creation while staying true to its fundamental mission of protecting the resources that are vital to life itself.

> **"Looking at plastic as a resource rather than as waste is a clear step forward, but only providing you plan ahead for the risks of circular pollution, which are currently under-estimated."**
>
> **Benjamin Chan-Piu**

MIXED NEEDS AND EMERGING CONCERNS

For waste producers, waste management remains a sensitive issue in more ways than one. It is a regulatory issue, governed by ever stricter legislation on business residues, hazardous as well as non-hazardous. It is also a logistical and economic challenge, driven by the twin imperatives of materials recovery and profitability. And,

most importantly, it is a technical challenge requiring advanced skills to identify, sort and safely handle toxic sludge residues, solvents, valuable black mass from batteries, and mixed waste that may contain hazardous as well as radioactive components. “Actors in some industries face complex situations when it comes to collection, treating and recycling,” explains Benjamin Chan-Piu, Senior Vice President, Liquid & Hazardous Waste at Veolia. “The pharmaceutical industry, for instance, generates hazardous waste from the manufacture of medicines as well as solid waste from its packaging.” Another serious emerging issue relates to dealing with new contaminants as part of the waste recycling process. The presence of PFAS in certain plastics raises questions surrounding recovery of this everyday waste, as Benjamin Chan-Piu points out: “Looking at plastic as a resource rather than waste is a clear step forward, but only providing you plan ahead for the risks of circular pollution, which are currently underestimated.” The same applies to other types of hazardous waste. “At cement works, for example, industrial oils and solvents can be used as substitutes for fossil fuels. And while the regulations in Europe contain safety mechanisms to prevent the cement from being contaminated, the same can’t be said in every other part of the world,” warns Benjamin Chan-Piu. A reminder that hazardous waste is only recognized as such if there is a regulatory framework in place that gives it this special status.

MULTIPLE FORMS OF WASTE; A SINGLE POINT OF CONTACT

There is no denying the fact that properly treating waste in line with local environmental regulations demands expertise in multiple fields. This is what a multi-services actor such as Veolia provides, leveraging complementarity between its business activities along with synergies between the treatment of solid and hazardous waste. “Being present across the complete value chain means we are one of the very few operators in a position to provide a one-stop response to managing these categories of waste,” says Eric Trodoux, Senior Vice President, Solid Waste Recycling & Recovery at Veolia Group. This end-to-end approach enables the Group to control and secure every stage of the waste management process, with complete traceability from collection to treatment and elimination of the most concerning components. Whether recovering materials, producing renewable energy, incineration, physicochemical treatments, decomposition, stabilization and waste storage at specialist centers, the Group can count on its wide-ranging expertise to develop treatment solutions located as close as possible to where they are needed. “In terms of handling solid waste, we usually work as a concession operator,” notes Benjamin Chan-Piu. “When it comes to the treatment of hazardous waste, we have our own merchant plants, facilities located close to production sites that give us far greater flexibility in dealing with the streams consigned to us.” This is the business model used in regions such as the Middle East, a fast-growing part of the world where the Group is the leader in hazardous waste treatment and where requirements are changing. Benjamin Chan-Piu describes the situation: “For industrial businesses in Abu Dhabi and Saudi Arabia, extracting and exporting crude oil is no longer enough. They are now looking to develop their own upstream industry, manufacturing a range of synthetic products. This generates a growing volume of hazardous and non-hazardous waste, requiring a strong local presence and specific treatments, which we can provide.” Given the growing complexity of environmental pollution, industrial businesses and local authorities are looking for a single point of contact with the ability to manage all the decontamination issues they face: exactly what Plug & Sorb offers. This solution developed by Veolia’s subsidiary SARPI, a specialist in treating hazardous waste, combines the Group’s know-how in waste and water treatments. It provides a mobile and modular approach to activated carbon filtration that can be rapidly implemented to combat accidental or chronic water pollution. The plug & play solution leverages Veolia’s long experience in water filtration and decontamination alongside the Group’s skills in hazardous waste management to deal with treating the spent activated carbon. The mobility of the treatment units, their adaptability to diverse pollution situations and the capacity to handle the entire activated carbon life cycle, from installation to regeneration, underline Veolia’s ability to deliver an integrated response by mobilizing its different business activities. This circular approach is further reinforced by the Group’s ability to use its own facilities to regenerate spent activated carbon, creating a virtuous loop that optimizes how resources are used and ensures treatment is as efficient as possible. Plug & Sorb is a concrete example of how synergies between Veolia’s business activities make it possible to develop agile and sustainable innovative solutions for protecting the environment.

REPLICABLE SOLUTIONS, DIGITAL TRANSFORMATIONS

Thanks to its capacity to deal with every aspect of waste management, Veolia provides actionable solutions at a scale appropriate to the needs of its municipal, local industrial, and large multi-site customers. Veolia’s worldwide presence is a powerful driver for efficiency, made even stronger by the Group’s internal Copy & Adapt approach. By pooling its solutions in waste, water and energy, the Group can roll out winning strategies in every region of the world. The BeyondPFAS range of solutions is a remarkable example of how Veolia combines expertise from its different business activities to create an innovative all-round environmental solution. These synergies are made possible by a process of coordinated mobilization between the Group’s three historical activities. In water, Veolia applies its advanced expertise in contaminated water treatment using cutting-edge technologies including activated carbon adsorption, advanced membrane filtration, and sophisticated systems to monitor PFAS concentration. The Group’s expertise covers the treatment of underground and surface water as well as industrial effluent. Veolia’s waste businesses provide another crucial component by taking care of the complex process of managing contaminated residual solids, including sludge containing PFAS and used filtration materials. Secure storage solutions and processes for the ultimate destruction of PFAS capitalize on many years’ experience in hazardous waste treatment. And the Group completes this integrated approach with its energy activity, providing its expertise in high-temperature thermal destruction processes and electrochemical oxidation technologies. This is an essential component in ensuring the ultimate elimination of PFAS while simultaneously optimizing treatments’ energy performance.

“Being present across the complete value chain means we are one of the very few operators in a position to provide a one-stop response to managing these categories of waste.”

Éric Trodoux

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Veolia stands out thanks to this unrivalled combination and its ability to offer a real end-to-end service, from initial diagnosis all the way up to the final destruction of pollutants. The Group's R&D efforts focus simultaneously on all three business activities, delivering continuous innovations and constant improvements to processes. The Group's network of regional facilities and the know-how of its multi-skilled technical teams ensure that every customer receives local, tailored support. It is precisely this capacity to foster dialogue and interactions between its different business activities that allows Veolia to offer solutions in situations where other actors find themselves stymied by technical or operational limitations. BeyondPFAS is a textbook example of the Group's strategy for creating environmental added value by leveraging synergies between its different areas of expertise to provide a comprehensive and efficient response to one of the major environmental challenges of our times.
As part of this drive for high added value, AI-based digital solutions play an increasingly important part in Veolia's strategy. Wherever the Group operates, digital technologies are used to ensure the best possible levels of service and improve the environmental impact of its customers' activities, in terms of both solid and hazardous waste treatment. "The tools we develop play a key role in everything from collecting waste to running incineration plants and handling logistics at pretreatment centers—and it's a particularly important role since the pollution we treat is highly complex," concludes Benjamin Chan-Piu. A contribution that accelerates ecological transformation today and paves the way for tomorrow.

1. 61 Mt in 2022 and 63 Mt in 2023. The 2027 target is 10 Mt for hazardous waste, one of the growth boosters in the GreenUp strategic program.
2. Regulation concerning waste elimination and materials recovery, supplemented in particular by the Order of January 4, 1985 on waste traceability and the Law of July 13, 1992 on non-recyclable waste.

HIGH-TEMPERATURE INCINERATION OF HAZARDOUS WASTE

High-temperature incineration is a thermal treatment process used for a wide range of hazardous waste from industry, healthcare and local authorities, including contaminated packaging and materials, oily sludge, pharmaceuticals and reagents. Veolia operates over 60 specialist incineration plants worldwide, safely processing these waste streams from A to Z to protect public health and the environment.

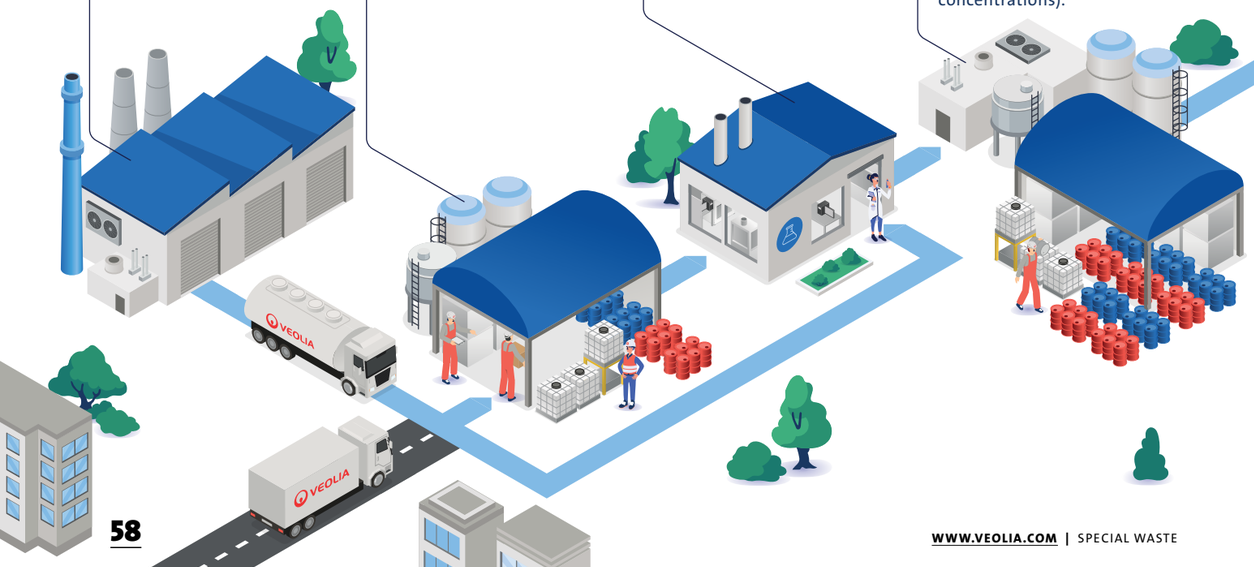
High-temperature incineration is one of the solutions at Veolia's disposal for treating hazardous waste when no other recycling or recovery options are suitable. Incineration is used to eliminate the waste's toxic potential and reduce its volume by breaking down complex organic molecules. The process also produces various gases and energy, which is recovered mainly as steam and often sold to nearby industrial facilities, helping phase out fossil fuels. Some of this energy is converted into electricity for sale or use on site. Veolia manages the entire incineration process at each of its incineration plants, from receiving waste to treating combustion gases. A full range of technologies is used to optimize energy consumption, limit atmospheric emissions and reduce the environmental impact of its facilities, with some of them processing up to 100,000 metric tons of hazardous waste annually.

1 Reception and collection
Hazardous waste is categorized at its point of origin by experts who recommend transportation, processing and recovery solutions.

2 Transportation
Waste is packaged and labeled. Depending on the volume, it is sent either directly to the processing site or for consolidation at a transit center.

3 Analysis
Every waste consignment is assessed to confirm it complies with regulations and ensure it is traceable, as well as to determine the treatment process required.

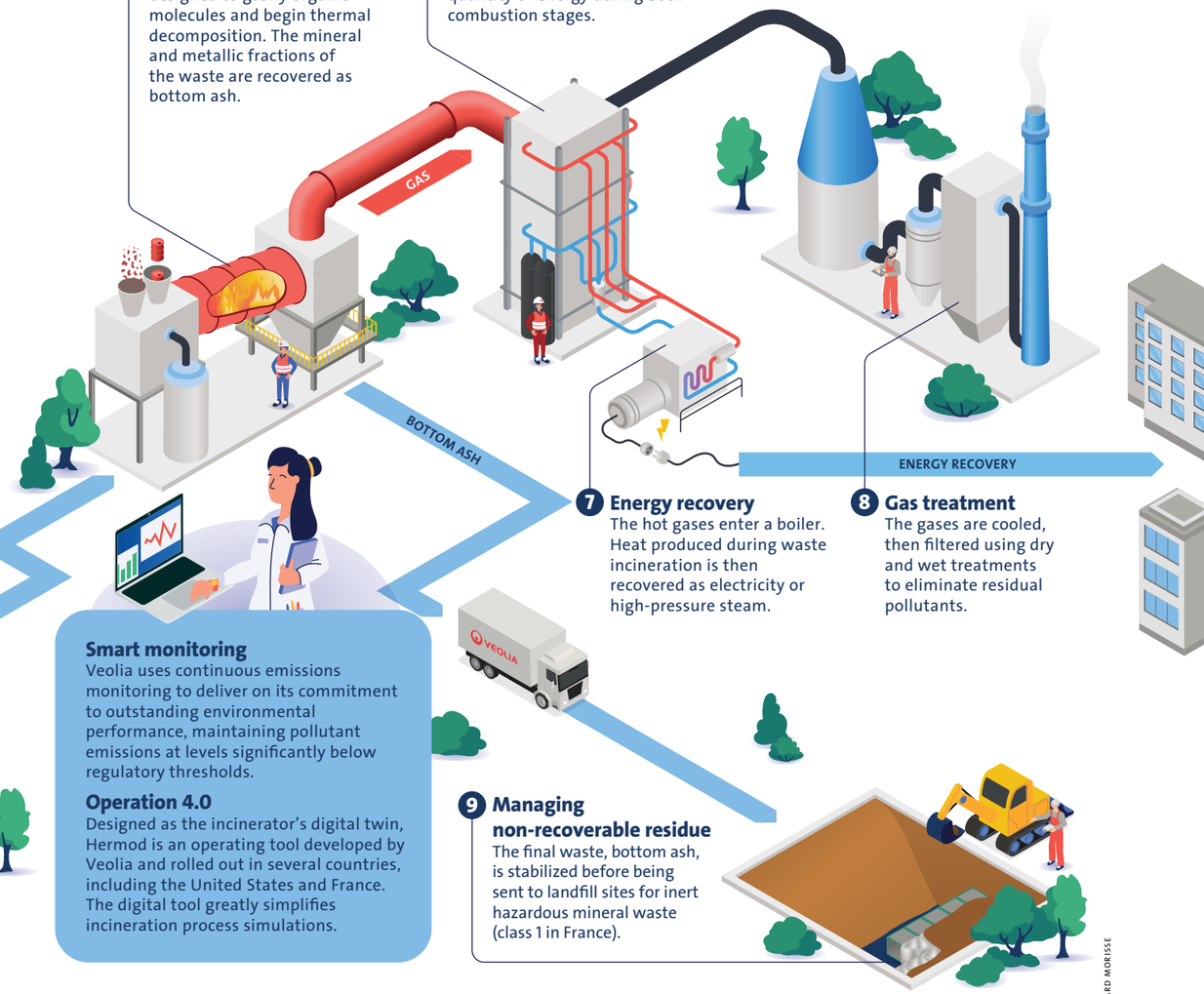
4 Pretreatment
Depending on its physical state, waste is prepared by crushing (solid waste) or pumping and mixing (compatible liquid waste). It may also be repackaged and separated (in the event of very high contaminant concentrations).



Innovating to intensify decarbonization
Veolia's R&D department strives to reduce the carbon footprint of the high-temperature incineration process, focusing in particular on capturing CO_2 emitted by incineration by-products during combustion. Veolia conducts furnace tests, looking at using energy from the incineration process to maintain combustion temperatures. It is also examining energy storage solutions as a way of reducing the electricity required to heat the air needed for incineration.

5 Combustion (rotary kiln)
Waste is loaded into a rotary kiln heated to 850°C for 30 minutes. The process is designed to gasify organic molecules and begin thermal decomposition. The mineral and metallic fractions of the waste are recovered as bottom ash.

6 Post-combustion
Molecules in the gases created in the rotary kiln are broken down in a second combustion chamber, where they are exposed to a temperature of 1,100°C for at least two seconds. Thermal decomposition of waste produces a large quantity of energy during both combustion stages.



7 Energy recovery
The hot gases enter a boiler. Heat produced during waste incineration is then recovered as electricity or high-pressure steam.

8 Gas treatment
The gases are cooled, then filtered using dry and wet treatments to eliminate residual pollutants.

Smart monitoring
Veolia uses continuous emissions monitoring to deliver on its commitment to outstanding environmental performance, maintaining pollutant emissions at levels significantly below regulatory thresholds.

Operation 4.0
Designed as the incinerator's digital twin, Hermod is an operating tool developed by Veolia and rolled out in several countries, including the United States and France. The digital tool greatly simplifies incineration process simulations.

9 Managing non-recoverable residue
The final waste, bottom ash, is stabilized before being sent to landfill sites for inert hazardous mineral waste (class 1 in France).

Sources: Report: Liquid and hazardous waste treatment and recovery, *Veolia, 2023*
Video: Treatment and recovery of hazardous waste, *Veolia, 2021* - *Video:* Hazardous waste treatment and recovery plant, *Veolia, 2025*

Ecological transformation: are we (still) ready?

The findings of the second edition of the Ecological Transformation Barometer, an initiative launched by Veolia and Elabe[1] in 2022, are eye-opening: 89% of the world's population are certain that climate disruption is happening now, and 66% are certain that the costs of inaction are going to be greater than the investment needed for ecological transformation. As the slide into fatalism and climate denial continues to gain ground, are we (still) ready?

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“People believe that cooperation is a precondition for ecological transformation.”

Laurence Bedeau

s it possible that ecological issues will be relegated to the background by recent geopolitical upheavals and their powerful impact on economies, energy issues, policy-making and migration? Any backtracking would be inversely proportional to the existential threat posed by climate change. Rising sea levels, loss of biodiversity, and a deteriorating environment are no longer abstract concepts; they are now part and parcel of our lived experience. The urgent need to tackle this crisis raises a fundamental question: are we genuinely ready to accept the changes required to protect our health, quality of life, and the future of our planet? To what extent can improvements to health and quality of life be leveraged to boost the acceptability of solutions and make sure they are adopted and rolled out at scale? These questions are central to the second edition of the Ecological Transformation Barometer carried out by Veolia and Elabe with the goal of informing the public debate by exploring solutions, and providing insights into the obstacles and drivers impacting their acceptability in order to make transition a reality.

HEIGHTENED AWARENESS COMPETING WITH THE APPEAL OF FATALISM

Temperatures are constantly reaching all-time highs, climate-related disasters are becoming more intense, and a sense of ecological and climate insecurity is becoming the norm: 65% of the world’s population feel exposed and vulnerable to risks relating to climate change or pollution. In most countries, women and young people aged 18-35 feel more exposed and threatened in terms of their health or material well-being. “There is pretty much nowhere in the world today where at least half the population, sometimes even over 80%, does not feel a sense of ecological insecurity,” notes Laurence Bedeau, a partner at Elabe. Most people around the world remain convinced that climate change is happening now (89%, stable compared to 2022), either because they experience it directly or see the real-world consequences close to where they live. However, climate denial (refusing to accept the human-caused origins of climate change) is on the rise (27%, +2 points) and 35% of respondents (+3 points) doubt humanity’s ability to limit climate change. Nevertheless, two thirds of the world’s population (66%, -1 point) are certain that the health consequences and cost of climate change will be greater than the investment needed to bring about ecological transformation. From increasing impacts on health to resource scarcity and more frequent natural disasters, the consequences of climate change are becoming increasingly tangible and harder to ignore. Described by the World Health Organization as “the single biggest health threat facing humanity”[2] — a view shared by 75% of respondents, the World Bank believes that climate change could push over 130 million people into poverty by 2030[3] and 74% of respondents also believe that climate change poses an acute threat to the poorest. In every part of the world, people realize that the colossal potential costs of inaction also represent a powerful driver for the changes and investment needed to deliver ecological transformation.

“The results of the second edition of the Ecological Transformation Barometer show that global public opinion firmly favors action.”

Estelle Brachlianoff

ECOLOGY: STOP NOW, OR DOUBLE DOWN?

While there is a clear consensus about the risks facing the planet and humanity as a whole, there is a marked absence of discussion about the solutions needed to reduce impacts on people. With around half the entire global population voting in 2024 (4.1 billion voters) in nearly 70 countries — including demographic heavyweights (India and Mexico) and economic powerhouses (the USA and EU), the key to national ecological policies will lie in countries' capacity to radically step up the pace of ecological transformation, not limiting themselves to preaching to the converted but also winning over those who are reticent. To this end, people want to see concrete measures and tangible solutions designed to tackle day-to-day material difficulties and threats looming over their homes, jobs and health. In all regions, there are voices claiming that social policies are incompatible with ecological action, with a growing number of politicians calling for an "ecological pause." However, they quickly fall silent once people realize the impacts on their health and quality of life. This is demonstrated by a United Nations Environment Programme report[4] revealing that the sums needed to help developing countries adapt to climate change are 10 to 18 times greater than current international public financial flows, i.e. between 203 and 365 billion euros per year until 2030.

TAKING ACTION TO MAKE A DIFFERENCE

To answer criticisms of ineffectiveness and foster greater engagement, it is vital to show how ecological transformation can deliver benefits for everybody. One of the main motivating factors mentioned by respondents is the desire to protect their and their family's health: 67% believe that a solution for protecting their health would make them want to change their habits or accept a slightly higher cost for accessing an essential service such as drinking water or locally sourced decarbonized energy. 64% are driven by a desire to improve their quality of life, underlining the intrinsic ties between environmental and human well-being. These figures clearly point to a growing awareness of the direct impact that a deteriorating environment and climate change have on human health and overall quality of life: air and water pollution, food insecurity, and the increasing frequency of extreme climate events are all serious threats. Preserved natural landscapes, guaranteed cleaner air and purer water, and attenuated risks of natural disasters are all seen as concrete advantages that can overcome the widespread fatalism and eco-anxiety currently sweeping the world.

HEALTH: SPEARHEADING ECOLOGICAL TRANSFORMATION

For 97% of respondents, health must become one of the key factors in local decision-making relating to water, waste and energy, ranking alongside ecological risks and the final price to consumers. To deal with the risk of water shortages (cuts, restrictions on use), almost eight in ten people worldwide are ready to eat food grown using recycled water (79%, +10 pts in 18 months), and 66% (+13 points) would drink water produced from treated recycled wastewater. "In every country around the world, most people say they are prepared to drink water produced from treated recycled wastewater," explains Laurence Bedeau. "The average 13-point increase over an 18-month period is driven by growing acceptance in absolutely all countries, including the most reluctant such as Japan, Indonesia and Morocco. And then there is also the 10-point increase in people prepared to eat food produced by agricultural practices that use recycled water, giving a 79% worldwide consensus. This shows just how fast the dial is shifting." According to Franck Galland, CEO of the consultancy Environmental Emergency & Security Services and associate researcher at the Foundation for Strategic Research, "In the longer term, water must be classed as a strategic priority. We can then introduce the technologies needed to increase water supplies. And by that I mean reusing wastewater."

In terms of cleaning up pollution, health risks are again the leading driver for acceptability. The health consequences of polluted water, although undetermined and not immediately visible, mean that more than eight in ten people worldwide (84%) are prepared to pay more for water with no micropollutants. This is precisely what Veolia is aiming for with GreenUp, its strategic program designed to accelerate the rollout of dedicated water treatment solutions while also developing innovative technologies to look after people's health and quality of life. "The Barometer helps us identify the obstacles and raise awareness so they can gradually be overcome. Above all, it allows us to tailor our responses to suit each country's needs and cultures," adds Jacopo di Nicola, a strategic planner at Veolia. "This is very much Veolia's strength, rooted in its century-plus experience and extensive international footprint."

COLLABORATING WITH STAKEHOLDERS

When it comes to collaboration, 93% of respondents believe that identifying and applying lasting, efficient and sustainable solutions requires coordinated commitments on the part of governments, businesses, and individuals. In the words of Franck Galland, "Responses to extreme climate situations will require organization, infrastructure and new models for public-private partnerships at state or EU levels, for example." This coordinated multi-party approach using a wide range of political, economic, regulatory, technological and social levers seems to be the only way to tackle the complex and multifaceted challenges posed by ecological transformation. Action, collaboration and shared accountability among the different stakeholders are all crucial. Only with coordinated and concerted efforts from all sides is there a chance of steering humanity toward a more sustainable tomorrow. "The actors seen as the drivers of ecological transformation are Veolia's stakeholders," Jacopo di Nicola reminds us. "The Group sits at the center of this matrix and is in constant dialogue with politicians, local authorities, international institutions, businesses and civil society." And cooperation is precisely one of the key components identified by Veolia for rolling out solutions to treat pollution, decarbonize, and regenerate resources at the local and regional levels. As part of GreenUp, the Group has set itself a range of ambitious stakeholder targets: doubling the number of "+1, ecology turned into action" groups from 12 to 24, and providing training in dialogue and cooperation to all its managers by 2027. Veolia has also inaugurated Terra Academia, an ecological transformation school and accelerator. For Terra Academia's president, Jean-Michel Blanquer, "ecological transformation is a non-negotiable priority for humanity. It will not happen properly unless training – the absolute foundation for success – is used to accelerate the process. We must take action, collectively as well as individually, to preserve our planet and approach human, economic, social and technical progress through the prism of this necessity."

BROADENING PERCEPTIONS

There remains a significant discrepancy between people's awareness of the need for transition and their perception of what the solutions to adopt will involve and how they will alter daily life which, however unstable it may be, is certainly tangible. 62% of the world's population (68% in Europe, +2 points) find it hard to imagine what daily life would be like after ecological transformation has taken place. "No matter the political messaging or financial difficulties our world faces, ecology will always be a major source of worry in people's lives," says Laurence Bedeau. "Because risks to health, infrastructure and demographics impact everybody indiscriminately. Ecological perceptions are either inexistent or negative. That's the problem. But the moment you bring forward solutions that are very concrete and show believable benefits, then buy-in is massive. This buy-in extends beyond any cultural, economic or social divisions." This inability to imagine what transition could look like is a majority viewpoint in all countries, although at slightly lower levels in countries with a high degree of climate change awareness. "We have to push back against the damage caused by the so-called ecological pause," says Jacopo di Nicola. "Even with a highly complicated and fast-moving geopolitical and economic context making debate more difficult, we need to stay optimistic and hope that in 2026, when the third Barometer is released, the environment will remain one of the top three priorities for people around the world." ◗

1. Veolia and Elabe barometer, 2nd edition, April 2024
2. COP26 special report on climate change and health: The Health Argument for Climate Action. WHO for COP26, October 2021
3. Groundswell Report, Part 2: Acting on Internal Climate Migration. World Bank, new edition, September 2021
4. Adaptation Gap Report. Underfinanced. Underprepared, November 2023, United Nations Environment Programme

Published every 18 months, the Ecological Transformation Barometer is a survey carried out in 26 countries from all five continents, polling the views of over 29,500 people. Together, these countries represent 60% of the global population, 67% of global GHG emissions, and 77% of global GDP. Conducted online from October 17 to December 6, 2023 and published in April 2024, the survey ensures a representative sample of residents aged 18 and over by applying the quota method to gender, age, region and social category variables.

"There is a great deal of demand for affordable, equitable and sustainable solutions that protect human health by reducing pollution and protecting our territories from extreme climate events."

Estelle Brachlianoff

3 questions for Laurence Bedeau

Partner at Elabe consultancy

Which parts of the world are seeing a marked rise in the number of people who believe that inaction will cost more than action?

France is one area, with an 8-point increase in the past 18 months (68%), but the numbers are also on the rise in Spain, Hungary, Brazil, Italy, and Japan. There has been a major shift in people's collective experience over the past three or four years, with the planet burning and nowhere that feels safe anymore. Take France as an example. For a long time, the country was more or less spared, but the summer of 2022 marked a tipping point. Before then, any focus on ecological issues was very much conditioned on the occurrence of a natural disaster that attracted media coverage for a limited period of time. Back then, half the population declared that they were worried and aware of a risk, before the issue and the emotions it generated faded away, disappearing from public conversation and everyday life. But this is no longer the case. Today, worries about health are pretty much a constant, centered particularly on water and air pollution. There is a lot of talk about per- and polyfluoroalkyl substances, known as PFAS. This is a major issue in the USA, and is moving fast up the agenda in Europe and France. People are worried about new types of pollution.

Have perceptions about water shifted since 2022?[1]

Yes. People are so worried about access to water and water quality that it is shifting the dial in terms of what they will accept. Issues surrounding new types of pollution have become a major health concern in most parts of the world. Some countries have started to introduce stricter regulations in this area. But people worldwide are firmly in favor of the precautionary principle. There is a remarkable willingness to accept that this means paying more for water — although a massive amount of work is still needed before it actually happens! At a time when all the world's economies are grappling with inflation, achieving such a high level (84%) of acceptability for slightly higher water bills to eliminate micropollutants and cut risks to health is exceptional, and very revealing of the sense of health insecurity the ecological crisis has triggered.

Who are people prepared to trust to deliver ecological transformation?

People in every part of the world are convinced that rolling out effective solutions will require a shared commitment by all stakeholders. Cooperation between them is seen as a precondition. A useful example is treated wastewater reuse, a technology that attracted widespread media coverage during the 2022 drought, including in France. People understand the central role played by local authorities, with local elected representatives heading the battle to adapt and protect the places where they live. Alongside them are businesses, which offer expertise, the resources needed to innovate, and speed of execution. Governments in every part of the world also play a major role as the source of laws, regulations and planning. Then there are international bodies and the influence of multilateralism, as illustrated by the Montreal Protocol and its focus on reducing the hole in the ozone layer. ◗

1. 2022: 1st edition of the Ecological Transformation Barometer.

Key results world / Europe

66% / 64%
believe that ecological inaction will cost humanity more than ecological action.

97% / 97%
state that health has to become one of the keys to local decision-making in terms of water, waste and energy, ranking alongside ecological risks and the final price to consumers.

64% / 65%
feel vulnerable to health risks relating to climate change.

67% / 64%
think that solutions that help protect their health and the health of those around them would encourage them to change their habits or accept a slightly higher price.

92% / 90%
are convinced that local authorities, businesses, governments, international institutions and individuals must identify and implement solutions together.

91% / 90%
believe that successful ecological transformation will require a combination of ecological planning, new laws and regulations, innovation, and information.

53% / 50%
consider that ecological actions should be a combination of sufficiency and technological solutions.

66% / 65%
are prepared to drink water produced from recycled wastewater in order to lower the risk of water shortages.

When Veolia adopted its purpose in 2019, it became one of the first companies listed on the Paris stock exchange to question the deep-rooted reason that underpins everything it does. Veolia wanted to see its identity, commitments and goals expressed in a single statement setting out its mission.

Once it decided to define its purpose, Veolia reached out to its stakeholders in an unprecedented consultation process. The Group's senior executives, employees and their representatives, customers, external experts and members of the public were asked to work together to draft a statement of purpose. Thanks to this process, Veolia's purpose is shared by a great many people, helping the Group to stay on course to meet, and even exceed, the targets set out in its Impact 20-23 strategic plan. The approach has now been implemented in the GreenUp 24-27 plan and continues to guide the Veolia Group's new multifaceted performance targets. Supported by dedicated governance and a powerful presence in the field, Veolia's purpose drives and consolidates its strategy: to be the global champion of ecological transformation.

Ecological transformation is our purpose

ECOLOGICAL TRANSFORMATION

Ecological transformation is the term used to describe all the changes that must be made by every actor at every level to:
- **decarbonize,**
- **depollute,**
- **and regenerate resources.**

The aim is to make sure that **human progress** stays within the planetary boundaries defined by science.

1 WHY WE ACT

OUR PURPOSE

Our purpose is a statement that defines what makes Veolia **useful to society**. It is a guide for the long term directing the activities of our 218,000 employees around the world.

2 WHAT WE OFFER

A PROTECTIVE ECOLOGY

With its GreenUp strategic program, Veolia is committed to working for a sustainable, desirable future by decarbonizing, depolluting, and regenerating resources. Veolia advocates working with all its stakeholders to build a third way that links ecology and economics, and protects **health, spending power, and resources.**

3 HOW WE DO IT

THANKS TO MULTIFACETED PERFORMANCE

Multifaceted performance is one of the tools we use to deliver our purpose. As well as helping steer and transform Veolia, it also guides our search for ways of **making a positive long-term impact** for all.

WITH AND FOR OUR STAKEHOLDERS

Opening up our business to all our stakeholders – employees, customers, shareholders, society and the planet – lies at the heart of our purpose so that we can identify **alliances and pathways for convergence** to help drive ecological transformation.

VEOLIA AWARDED TWO MAJOR ESG DISTINCTIONS

Veolia has announced that it has received two distinctions from CDP, scoring an A for CDP Climate Change and an A- for CDP Water Security. Two distinctions that testify to the Group's transparency and performance in fighting climate breakdown, adapting to its impacts, and preserving water resources.

Veolia has reaffirmed its status as one of the businesses most committed to a sustainable future, an achievement reflected in the recent environmental, social, and governance (ESG) rankings announced in February 2025. CDP (formerly the Carbon Disclosure Project) is a leading international NGO that manages one of the largest global environmental databases, encouraging investors, businesses, countries, and regions to assess their impact and take tangible action.

The organization gave Veolia an A for CDP Climate Change and an A- for CDP Water Security. Following these announcements, S&P Global, the parent company of the financial ratings agency Standard & Poor's, chose to include Veolia in its 2025 Sustainability Yearbook (which features just 780 out of more than 7,690 companies assessed). Veolia ranks in the top 5% of the largest global companies recognized for their sustainability performance, and also comes second out of 74 companies in the Multi and Water Utilities sector with a Corporate Sustainability Assessment (CSA) score of 79/100.[1] This rating means that, for the eighth year in a row, Veolia has been included on the DJSI (Dow Jones Sustainability Indices) World and Europe indices, renamed Dow Jones Best-in-Class Indices this year.

RECOGNIZED LEADERSHIP

These ESG ratings stand alongside the scores obtained by Veolia Environnement. Its continued inclusion on the FTSE4Good and CAC 40 ESG indices means it has maintained its Prime distinction[2], and it is ranked in the top 10% of the Multi-Utilities sector in ISS ESG's assessment, receiving a B rating. These scores and rankings are a mark of prestige for the Group as well as highlighting its continuous commitment to ESG issues, a commitment at the core of Veolia's purpose and embodied in the strategic GreenUp 24-27 program through the Group's multifaceted performance targets.

1. On 12/18/2024 - 2. On 10/18/2024

Key figures

24,800 companies submitted their environmental data to CDP in 2024

62 business sectors assessed by S&P Global

Over **1,000** indicators analyzed

Just **10 %** of the **2,500** biggest companies from the S&P Global Broad Market IndexSM are selected for the Dow Jones Best-in-Class World index.

Courrières plant, a center of excellence for addressing industrial hazardous waste challenges in France

The Courrières site in the Hauts-de-France region of north France is a textbook example of Veolia's expertise in processing and recovering hazardous waste. Located near the city of Lens, this state-of-the-art industrial site combines innovative technologies with tailored services to provide local businesses and manufacturers with optimal and safe hazardous waste management, while maximizing their environmental performance.

Veolia has a track record stretching back over more than three decades at its Courrières site near the northern French city of Lens, successfully combining the challenges of risk management, ensuring safety for employees and the general public, with environmental protection, strict respect for all regulations, resource recovery, and helping industrial businesses manage their hazardous waste. As a showcase for the Group's expertise in depolluting, decarbonizing and regenerating resources, the Courrières site is the embodiment of excellence in industrial ecology.

Veolia is a strategic partner to the region's manufacturing industrial businesses, managing their waste to ensure the continuity of their activities while also minimizing their environmental impacts, in line with the Group's decarbonization targets. As part of its response to emerging challenges, the site actively supports the development of new industrial activities, particularly via managing waste streams from nearby factories producing batteries for use in electric vehicles. The cluster of gigafactories in the region, mostly located between Dunkirk and Douai, is a key component in the region's industrial sovereignty. Veolia's expertise in processing waste from these facilities ensures full control over the complete value chain, which in turn guarantees the independence and sustainability of this strategic industry.

The Courrières site houses seven interconnected treatment units, each dedicated to handling different types of industrial waste. The depackaging unit identifies and separates packaging, while the shredding unit prepares materials for subsequent processing. Pollution is neutralized and energy recovered via the high-performance incinerator. An evaporation-condensation system treats effluent, with a centrifugation process used to separate water-hydrocarbon mixtures. The final piece of this integrated jigsaw is the physicochemical and biological treatment station, which is continually modernized to boost its energy efficiency.

The site's commitment to exemplary environmental performance reflects in its zero water discharge policy in place since 2006, strict traceability protocols, and a complete prohibition on any form of waste dilution. These practices fully align with the operational excellence commitments contained in Veolia's GreenUp 2024-2027 strategic program.

In addition to waste processing services, the site also offers tailored support to manufacturers in the form of audits, consultancy, R&D, logistics, digital solutions, and custom services. This all-round approach, underpinned by digitalization of its services, provides a response to every customer's requirements in terms of safety, regulatory compliance and cost optimization, while actively contributing to regional economic development.

#Key figures

140,000
metric tons of hazardous waste treated annually,
across all industries

5 GWh
of energy recovered annually
= power for 1,200 homes

52,500
cubic meters of water recycled annually
= equivalent to the annual consumption of 1,000 people

135
employees on-site daily

THIS IS NOT A RECYCLED PLASTIC BALL

It's a virtuous circle... supporting 1.3 million jobs worldwide!*

With 65 million metric tons of waste processed and 491,000 metric tons of plastic recycled every year around the world, Veolia contributes to generating 1.3 million jobs both directly and indirectly.

Veolia is driving ecological transformation to promote regional and human development.

Find out how Veolia is accelerating ecological transformation near you: www.veolia.com

VEOLIA

Full-time equivalent jobs (FTE): each direct job at Veolia supports a further 5.5 jobs in the economy. Each euro of added value created by Veolia generates an additional €2.60 in the economy. Sources: key figures from Veolia's Integrated Report 2023-2024.