

# ACHIEVING THE SUCCESSFUL ECOLOGICAL TRANSFORMATION OF YOUR CITY TOGETHER



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# EDITORIAL



*Together, let's build a more attractive, healthier, and more resilient city, offering a better quality of life and greater comfort to its inhabitants.»*

## **Another city is possible!**

Heat waves, storms, floods, water shortages, forest fires, coastal erosion... the effects of global warming are hitting regions hard and raise the inevitable question of how areas can and will adapt. This major challenge raises significant questions in terms of planning and long-term investments. It's also an opportunity for communities to reinvent themselves by imagining the city of tomorrow.

A greener, more pleasant, resilient, and smart city is possible. At Veolia, we help communities deploy solutions to build the city of tomorrow. Waste recovery, wastewater reclamation, optimization of energy efficiency and the entire water cycle, and more: our tailor-made and integrated solutions are a powerful ally helping cities reduce their environmental footprint while improving inhabitants' quality of life.

For 170 years, Veolia has been the world champion of ecological transformation, using innovation to protect health, purchasing power, and natural resources. Today, we have more than 218,000 employees working hard every day around the world. This local presence, and our ability to combine our three businesses, are a major asset helping cities decarbonize, depollute, and preserve resources. And we can prove it! In 2023, 15.5 million tons of CO<sub>2</sub> were erased from our clients' carbon trajectories, and we aim to increase this figure to 18 million tons by 2027 with our GreenUp strategic program.

Ecological transformation is within reach. It involves tangible, affordable solutions that have proven their worth. Because every region has its own challenges, solutions must be imagined hand in hand with local authorities. The result is a more attractive and healthier city, offering a higher quality of life, greater comfort, and better health to its inhabitants. A more sustainable and resilient city that will be able to adapt to the impacts of climate change, the growing pressure on resources, and a potentially unstable geopolitical context. A city that's a great place to live.

All over the world, Veolia puts its teams, solutions, standards of excellence, and multifaceted performance approach at your service to help you shape your ecological transformation. So, together, let's build vibrant, resilient, healthy, and attractive communities.

**With GreenUp,  
let's make the future desirable together!**

**Estelle Brachlianoff**  
CEO of Veolia

# 1. TRANSFO

your perspective  
of your city



# FORMING



## Veolia is here to help you change your perspective

Your municipal facilities offer multiple opportunities, as long as you don't view them as standalone sites, but rather as elements belonging to a larger environment. Each territory functions like an ecosystem, leveraging synergies between different actors (municipal, industrial, commercial, agricultural...) with strong interactions between economic, financial, social, and environmental challenges.

As an expert in ecological transformation, Veolia relies on a wide range of concrete solutions and its constant capacity for innovation, to help you identify transformation opportunities in your local area.

Changing perspective means transforming utilities into growth opportunities. Your area doesn't just produce effluents and waste to manage. It offers materials that can be transformed into resources.

Changing perspective means transforming tensions on resources into local synergies. The waste and effluents from one can become resources for others. The needs and contributions of all actors in your territory must be considered to establish synergies between resources.

**Together, let's give ourselves the means to take action and combine a strong commitment to the environment with the preservation of the quality of life.**



These are not only  
**wastewater to be treated...**





...but high-quality  
water supply sources for agriculture.

AS SAMRA WASTEWATER  
TREATMENT PLANT



TRANSFORMED  
INTO



**133 M**

m<sup>3</sup> of high-quality  
water for irrigation

**25%**

of the country's  
agricultural needs

USED TO  
PRODUCE



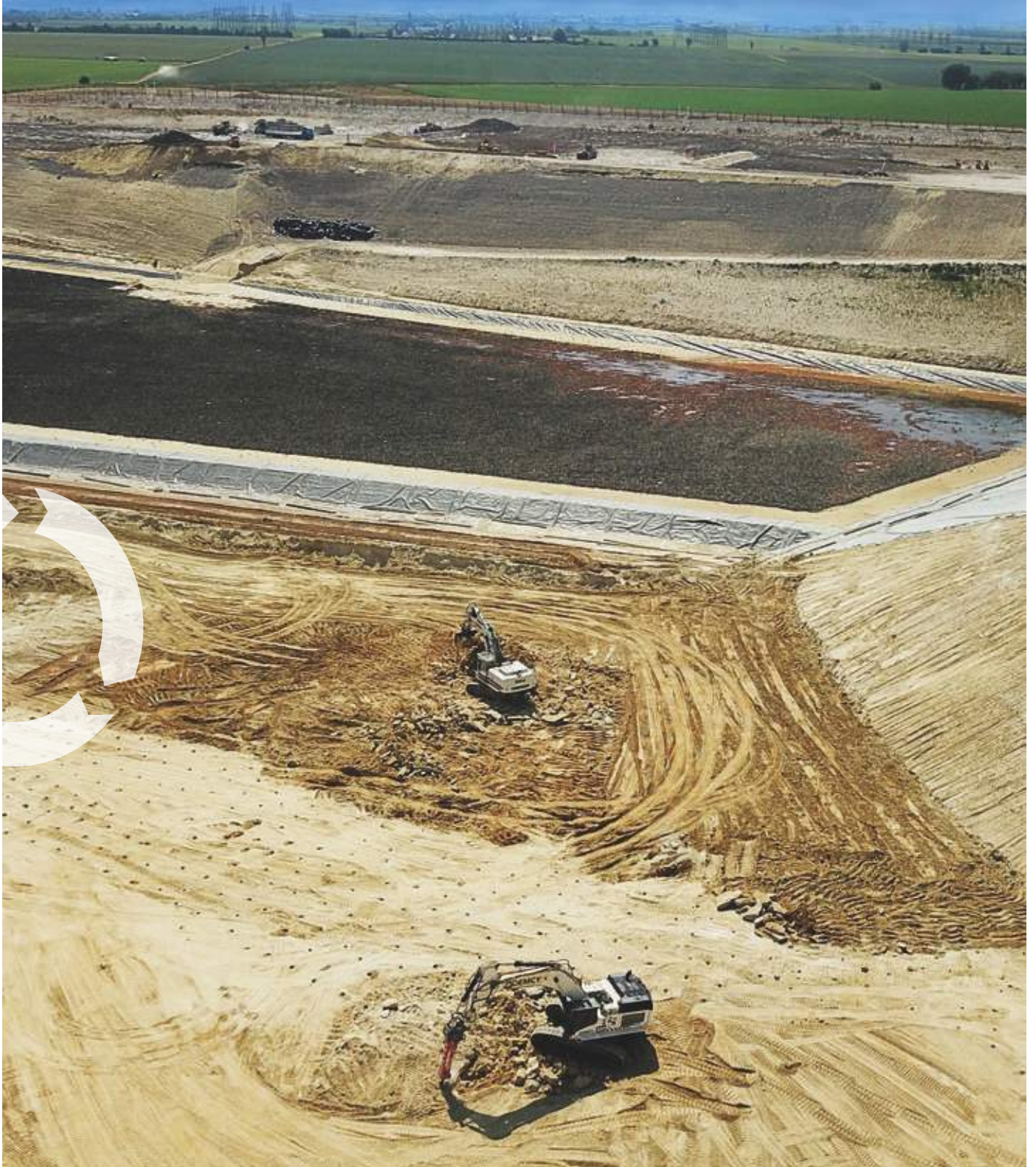
**70,000**

MWh  
per year of  
renewable energy

**60%**  
biogas

**30%**  
hydro

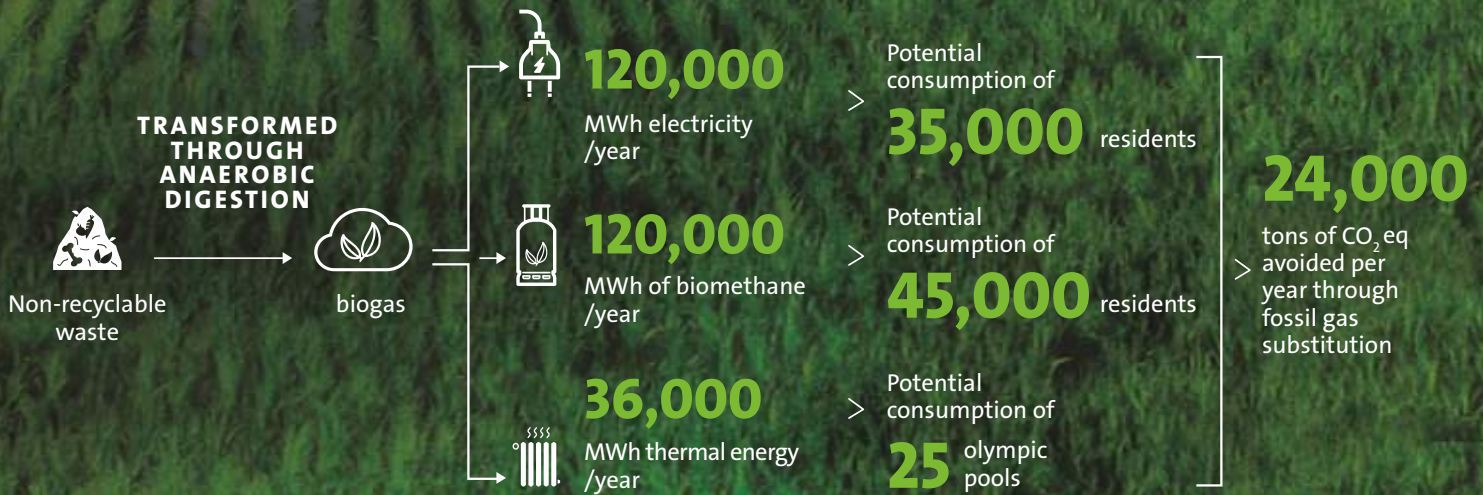
This is not just  
**waste...**



# ...but resources for producing biomethane.

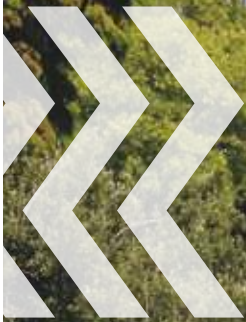


VAL'PÔLE, CLAYE-SOUILLY LANDFILL SITE\*

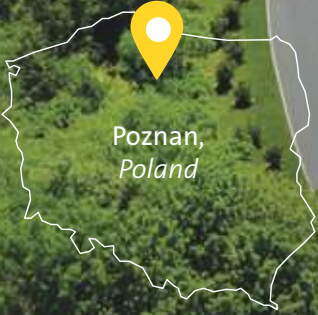


\* 2023 data

These are not just public buildings  
**that will consume a lot of  
energy for heating...**



...but also buildings that  
**will harness the waste heat from the  
neighboring factory.**



Poznan,  
Poland



The  
**Volkswagen**  
foundry

WASTE HEAT



**6,500**

apartments  
heated



# 2. SHAPING

the ecological transformation of  
your local area together





## Veolia opens up a world of possibilities

Veolia helps you determine your transformation trajectory: what actions to take, where, how, and when?

Our approach aims for multifaceted performance by considering all economic, financial, human, and environmental challenges.

With operational, affordable, and replicable solutions in the water, energy, and waste sectors, Veolia enables your territory to become more desirable.

The solutions we implement empower you to take action.

Your territory is becoming less and less CO<sub>2</sub> emitting. It is becoming more agile and resilient in the face of climate change.

It continues to create more local synergies between resources and is committed to ecological transformation.

It is becoming less polluted and more enjoyable to live in.

But it continues to develop, progress, and initiate projects. It is a vibrant city looking towards the future.

**The ecological transformation of your local area does not restrict you; it opens up a world of possibilities.**

Strategic program  
2027

# Green Up



**18 Mtons CO<sub>2</sub> eq**  
erased in 2027 (scope 4)







# 2.1

## DECARBONIZATION

### Toward carbon-neutral cities

In its 6th assessment report, the IPCC (The Intergovernmental Panel on Climate Change) estimates that global warming will reach 1.5 °C by the early 2030s. Rapidly reducing global net CO<sub>2</sub> emissions to zero appears to be one of the preferred solutions to limit climate change. In parallel, efforts must be intensified to adapt infrastructures and lifestyles to the new climate reality.

In the face of these challenges, municipalities and citizens are on the front line in building a low-carbon city by implementing solutions aimed at:

- **Reducing** the energy consumption of sites by implementing energy management and associated energy efficiency measures;
- **Increasing the efficiency and energy performance** of sites, notably through digital solutions based on generative artificial intelligence;
- **Effectively managing** the energy demand of buildings;
- **Minimizing greenhouse gas emissions** through the circular economy and the recovery of waste energy;
- **Locally producing** more renewable and recovery energies;
- **Valorizing the energy** from water and sanitation networks;

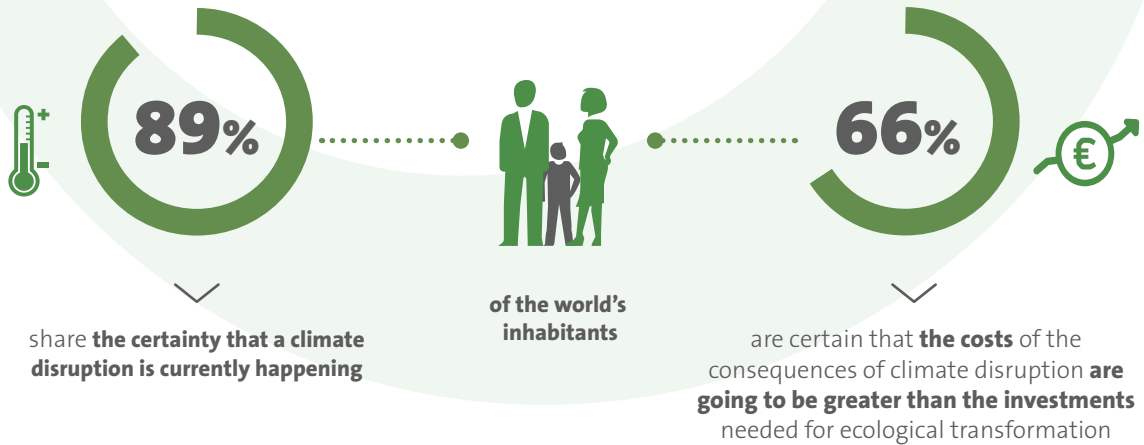
- **Innovating** to capture CO<sub>2</sub> at facilities;
- **Implementing less energy-consuming** water technologies.

In addition to addressing environmental challenges, decarbonizing your cities brings you benefits in terms of energy efficiency, financial performance and quality of life. These elements contribute to the attractiveness of your territories.

**Veolia offers decarbonization solutions in each of its business areas. These solutions serve as levers of action to engage your territories on the path to carbon neutrality by 2050, with the commitment to eliminate 18 million tons of CO<sub>2</sub> eq by 2027.**



# The world's inhabitants recognize and approve **your actions in favor of the decarbonization of territories**

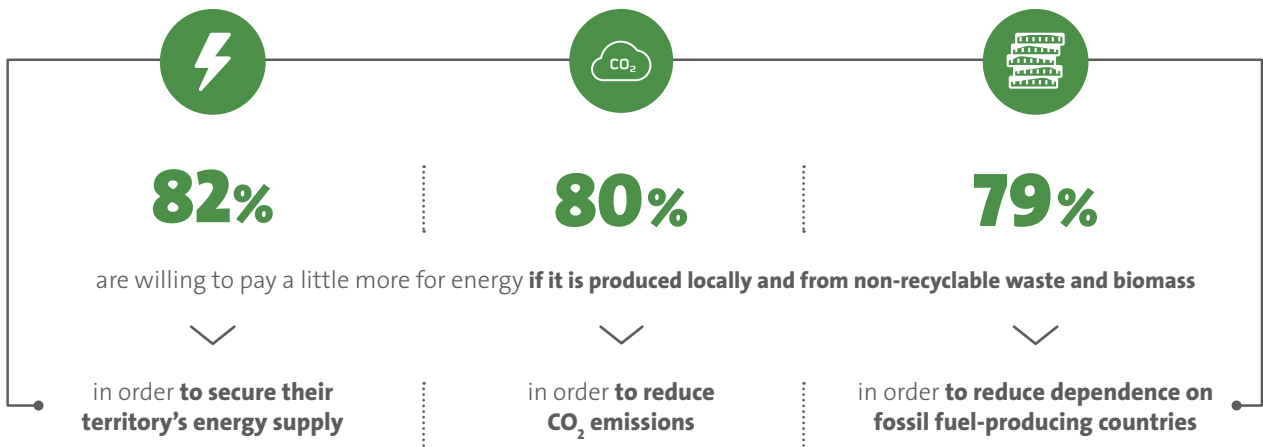


**+ 90%**

believe that ecological transformation requires the **joint commitment of all stakeholders**

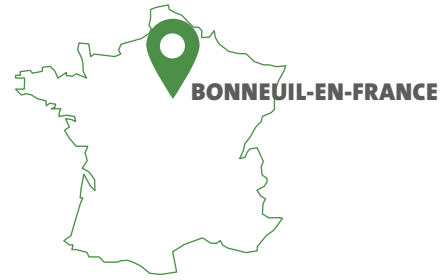


## ARE READY TO PAY MORE FOR LOCAL AND DECARBONIZED ENERGY



Sources: Barometer of Ecological Transformation, Veolia and Elabe, march 2024. A survey involving over 29,500 individuals (between 1,000 and 2,000 per country), carried out across 5 continents, in 26 countries. The countries were chosen for their demographic weight, their weight in GHG emissions and to ensure a diversity of ecological political and cultural histories. Overall, these countries represent nearly 60% of the world's population, 67% of global GHG emissions and 77% of global GDP.

# In Bonneuil-en-France, France, decarbonizing wastewater treatment for a greener territory



*In Bonneuil-en-France (France), Veolia's combined expertise in water technologies and energy management has allowed for the improvement of the wastewater treatment plant's performance, while also utilizing the wastewater to produce local, renewable, and green energy.*

## INCREASE IN CAPACITIES AND SUSTAINABLE DEVELOPMENT

On behalf of the Local Council (Syndicat Mixte pour l'Aménagement Hydraulique des vallées du Croult et du Petit Rosne - SIAH), which treats wastewater from 35 municipalities in the eastern part of the Val d'Oise region, Veolia, through its subsidiary OTV, has managed the design and construction of the wastewater treatment plant in Bonneuil-en-France, as well as its operation and maintenance. The project has increased the capacity and treatment performance of the plant, while also incorporating sustainable development principles. The treatment capacity of the plant has been increased from 350,000 to 500,000 Equivalent Inhabitants (EH). The prioritized reuse of existing structures such as biological basins and pre-treatment buildings has significantly reduced the carbon footprint of the construction and preserved environmentally sensitive areas.

## INNOVATIVE TECHNOLOGIES

The implementation of innovative technologies also allows for the utilization of wastewater to produce green energy and reduce the SIAH's dependence on fossil fuels. The sludge generated by the purification process is used to produce biogas, which is purified using the MemGas process before being injected into the existing gas network. This renewable source of green energy corresponds to the annual gas consumption of 1,750 newly heated gas-powered homes. The heat produced by the treated water is also recovered using the Energido process to heat administrative and technical buildings. After treatment, a portion of the wastewater is reused as industrial water, reducing the pressure on water resources to mitigate the effects of climate change. Finally, the treatment of wastewater through biological processes eliminates organic matter and nitrogen, which are responsible for algae proliferation and the deterioration of the aquatic ecosystem. The collaboration between Veolia and the SIAH has resulted in the transformation of what was once considered waste into a valuable resource and the establishment of a virtuous circular loop for the communities, residents, and the environment!



**Treatment of wastewater from  
35 municipalities**

in the Val d'Oise region

**12,000 m<sup>3</sup>  
of biogas produced per day**

# In Europe, leveraging electrical flexibility to Ensure Network Reliability



*Flexcity, a subsidiary of Veolia, is a leading player in the European electrical flexibility market. It provides electrical network operators with flexible energy consumption via its expertise in intelligent energy optimization services to help secure their networks by ensuring a balance between electricity supply and demand.*

## ELECTRICAL FLEXIBILITY SOLUTION

Flexcity offers solutions to leverage the electrical flexibility of thousands of consumer or producer sites. Through its technological platform, the state of the electrical network is constantly monitored, and an alert is issued when there is a significant difference between consumption and production. Partner sites are then asked to temporarily adjust their electricity production or consumption, in exchange for compensation. This modulation capacity helps to compensate for imbalances in the electrical network during peak consumption periods or when there is excess electricity on the grid (due to too much solar and/or wind energy). Since electricity grids have to be continuously balanced to avoid blackouts, precise management of consumption and production is necessary to ensure network stability. Therefore, in case of: excess electricity on the grid, production needs to be reduced or electrical consumption needs to be increased, electricity shortage, production needs to be increased or electrical consumption needs to be reduced (load shedding).

## OFFERS DEDICATED TO THE WATER INDUSTRY

Electrical consumption represents a significant portion of the operational costs of drinking water treatment and wastewater treatment sites. That is why Veolia has developed dedicated offers that meet the specific needs of each type of site: drinking water production, pumping stations, wastewater treatment plants, etc. Flexcity is capable of adjusting the start-up and shutdown of electrical installations while ensuring treatment quality.

## MAKING THE ENERGY TRANSITION A REALITY

The Smart Grid technologies and electrical flexibility implemented by Flexcity contribute to:

- **Securing** the electrical supply of territories through increased flexibility and stability.
- **Adapting** energy consumption to the needs of the electrical network to reduce energy costs or generate additional revenue.
- **Playing an active role** in the energy transition marked by the electrification of energy consumption.
- **Integrating** more renewable energies by compensating for the intermittent nature of solar or wind energy through constant monitoring of the electrical network and real-time modulation.



**10,000**  
upgraded sites

**2 GW**  
of flexible power

# In London, United-Kingdom, heating an eco-neighborhood through a biomass district heating network



Veolia provided a district heating network in the **Hale Village** eco-neighborhood in London, which supplies heating and hot water to homes with local and renewable energy from biomass. This installation helps bring the homes into compliance with the local environmental standards of the Code Level 4 Sustainable Homes.

## COMPLIANCE WITH SUSTAINABLE HOUSING STANDARDS

Hale Village is a modern housing and community development beside the River Lea in Tottenham Hale, London. The Village consists of over 2,500 eco-friendly homes as well as commercial retail space, church, community center, health center and a crèche. In order to comply with the latest environmental standards in construction and the London Climate Change Zone, Hale Village Properties's Manager, Lee Valley Estates, wanted each house to achieve the Code Level 4 Sustainable Homes standard. This standard requires a more efficient and sustainable centralized district heating system.

## A SUSTAINABLE SOLUTION WITH MULTIPLE BENEFITS

After analysis, the decision to construct some facilities, including a biomass district heating and hot water production network became evident. Veolia and its partner installed a 1.6MW boiler on the site, designed to produce the necessary hot water for heating and domestic hot water supply to all the housing units. The biomass is obtained from carbon-neutral wood pellets, derived from UK wood waste. The use of biomass offers multiple benefits, including sustainable heat and hot water production, reduction of greenhouse gas emissions and lower costs compared to comparable fossil fuels. Furthermore, the use of locally sourced biomass further reduces the carbon footprint of the installation.

*"We were very impressed with the way Veolia kept us involved in all aspects of the development of the supply agreements and commercial structure. I would also like to express my appreciation for the high level of customer care they have demonstrated, both to ourselves and our residents. This has created a level of trust that issues will be resolved quickly and efficiently with the customer being the key focus at all times."* Nigel Fletcher, Finance Director, Lee Valley Estates



**5,230 tons**  
of CO<sub>2</sub> saved per year

# In Gold Coast, Australia, increasing waste recovery to strengthen recycling and develop the circular economy



**Gold Coast**, the 6th largest city in Australia and a tourist destination, has entrusted Veolia with the operation of several recycling, resource recovery, and waste management facilities. *Objective: Improve their value through optimized management and an increase in the recycling rate, for a better environment.*

## IMPROVE WASTE RECOVERY RATES BY 5% BY 2025

Australians generate 61.5 million tons of waste each year, of which 60% is recovered. To save resources and preserve the environment, the country has set a goal to achieve an 80% recovery rate by 2030. In this context, the city of Gold Coast, the second largest local government, 6<sup>th</sup> city in Australia, a tourist destination welcoming 10 million visitors each year and the future site of the 2032 Olympic Games, has called on Veolia to drive improvement in how waste is managed locally. As part of an initial 7-year contract for resource recovery (RRS), Veolia has committed to improving the Gold Coast's recovery rates by 5% by 2025, thanks to optimized waste management and increased recycling.

## ENVIRONMENTAL PROTECTION AND JOB CREATION

Since May 2023, Veolia has been operating 5 of the region's essential resource recovery facilities. These include 3 community waste and recycling centers, as well as 2 landfill centers. Veolia has chosen to work with local social enterprises to achieve its environmental goals. In total, around a hundred people are directly employed by Veolia as the resource recovery (RRS) contractor.

*“The contract award will bolster recycling and prevent waste from being sent to landfill - all of which will contribute to a better environment. We plan to develop the city's circular economy program by increasing resource recovery by 5% by 2025. Environmental protection is important for the Gold Coast community and we are committed to achieving it”* says **Craig Barker**, Veolia's Chief Operating Officer for resource recovery.



## SAVINGS

In addition to environmental benefits, Veolia's optimized management generates savings for the city of Gold Coast, which remains the owner of all its facilities and infrastructure and retains control of waste rates, fees, and charges. On top of the direct savings generated by Veolia's management, the city of Gold Coast estimates the additional benefits expected over the next 7 years at 35 million \$AUD, particularly by avoiding the payment of the state's waste tax.



Improvement of

**5%**

in the waste recovery rate by 2025



Reduction of

**77,000 tons/year**  
of carbon emissions



**35 million**

AUD dollars in expected  
benefits over 7 years

Strategic program  
2027

# Green Up



**1.5bn m<sup>3</sup>**  
fresh water saved in 2027

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# 2.2

## SAVING AND REGENERATION OF RESOURCES

### Toward cities rich in opportunities

The intensive exploitation of natural resources leads to their scarcity, tensions on strategic supplies that hinder the energy transition, but also environmental damage such as biodiversity loss, greenhouse gas emissions, excessive water usage...

Overconsumption of resources also generates waste that must be processed, recovered, and reused.

In a city rich in opportunities, natural resources are **preserved as much as possible by considering all material flows as potential resources and constantly creating new local supply chains.**

A city rich in opportunities thus **produces secondary raw materials** from recycled waste: recycled plastics, rare metals from electronic waste, valorized solvents, compost...

A city rich in opportunities **produces renewable** energy by enhancing or recovering waste, wastewater, and fatal energy.

A city rich in opportunities **protects the water resource and ensures its access in areas under stress** by reusing treated wastewater with suitable uses and economic models.

A city rich in opportunities **multiplies synergies between all private and public actors** to optimize its consumption, create new resources by developing circular savings, and regenerate water resources.

By combining its complementary expertise in water, waste, and energy, Veolia offers you efficient and innovative solutions to optimize your resources from a societal, ecological, and economic perspective, committing to regenerate 1.5 billion preserved fresh water by 2027.



# The world's inhabitants endorse **your actions to counter resource scarcity**

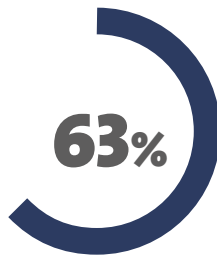


# 68%

of the inhabitants are **aware of the scarcity and depletion of resources**



## ARE READY TO CHANGE THEIR HABITS AND LIFESTYLES



if they are certain that it would guarantee **food independence in their country:** quality food in sufficient quantity

## ARE IN FAVOR OF RECYCLING AND REUSE TO PRESERVE RESOURCES



# 66%



are ready to **drink potable water from recycled wastewater**



# 80%



are ready to pay a little more for electrical and electronic devices to ensure that the battery and device itself are **recycled, and to limit the pollution caused by the extraction of rare metals** and reduce our dependence on countries that produce these metals



# 60%



if they are certain that it is useful for ensuring **energy independence in their country:** that everyone would have energy when they need it

# In Indonesia, recycling waste to produce new resources



*Indonesia holds the unfortunate record of being the second-largest contributor to plastic waste pollution in oceans, with detrimental effects on marine ecosystems. Veolia has constructed the largest plastic bottle recycling plant in the country for Danone-AQUA. Positive impacts are expected in waste management and environmental protection.*

## COMBATING OCEAN POLLUTION

In 2017, the Indonesian government launched a national plan to combat marine plastic pollution. With an annual budget of \$1 billion, the plan aims to reduce waste production by 30% and marine plastic pollution by 70% by 2025. It focuses on behavior change, fighting land-based pollution, and significantly reducing plastic production.

## PRODUCING NEW BOTTLES FROM RECYCLED PLASTIC

To contribute to addressing these challenges, Veolia Indonesia has constructed a PET bottle recycling plant for Danone-AQUA in the Pasuruan industrial zone (East Java). Operational since 2020, this plant has a recycling capacity of 25,000 tons of PET per year, making it the largest plastic bottle recycling plant in Indonesia. Some of the recycled plastic will be reused in the production of new bottles by Danone-Aqua.

## IMPROVING WASTE MANAGEMENT AND CREATING EMPLOYMENT

Through this industrial facility, Veolia is involved in:

- **Developing** an efficient waste management system
- **Promoting** the Circular Economy in Indonesia
- **Strengthening** expertise in plastic waste collection and recycling in Indonesia
- **Creating** local job opportunities



Production of

**25,000 tons/year**  
of food-grade **recycled PET**

# In Germany, coal phasing-out, a project of ecological transformation



*BS|ENERGY, a subsidiary of Veolia Deutschland, is phasing out coal in Braunschweig by implementing a sustainable concept that operates with two newly built combined heat and power (CHP) plants: biomass and gas turbine. Compared to traditional energy generation with the fossil fuel hard coal, this new flexible and sustainable power plant concept enables ecological and cost-effective energy generation. Veolia and its associated company BS|ENERGY are thus taking an important step towards decarbonization. The modernized power plant park uses waste wood as its main fuel and replaces the previous coal-fired combined heat and power plant. The third important pillar alongside the two new plants remains the existing flexible gas and steam turbine plant, which, together with the heat storage facilities and the close-knit and efficient district heating network. Besides environmentally friendly electricity, it generates heat for more than 50,000 households.*

## VALUING LOCAL RESOURCES

An important component of the generation project in Braunschweig is the waste wood recycling plant built by Veolia in Lengede - near Braunschweig - parallel to the biomass CHP plant. There, Veolia has built a waste wood processing plant for 180,000 tons of waste wood per year. The processed waste wood will be supplied as fuel to the biomass cogeneration plant of the Veolia subsidiary BS|ENERGY in Braunschweig, just 30 km away - and replaced coal as an energy source for the generation of electricity and district heating. As a result, the air quality in Braunschweig will be significantly improved by the new plant compared to the previous coal-fired power plant and we will achieve a significant reduction in CO<sub>2</sub> emissions.

## 50% REDUCTION IN CO<sub>2</sub> EMISSIONS

The implementation of this installation has resulted in a reduction of 50% CO<sub>2</sub> emissions from the power plant. The solution deployed in Braunschweig contributes to:

- **Creating** new resources in a local circular economy.
- **Achieving** Germany's renewable energy goals.
- **Combating** climate change.



**50% reduction in CO<sub>2</sub>**  
emissions from the power plant

### Performance

#### Biomass CHP plant:

Thermal: **60 MWth**

Electrical: **21 MWel**

#### Gas turbine CHP plant:

Thermal: **78 MWth**

Electrical: **68 MWel**



# In Az Zour, Kuwait harnessing waste energy to preserve water resources

*To address water challenges in Kuwait, a country facing one of the most severe water stresses in the world, Veolia has delivered units for desalinating seawater that harness the waste heat from a nearby power plant. This energy-efficient and localized solution aims to preserve water resources.*

## ADDRESSING WATER STRESS

Kuwait is facing a significant increase in water and electricity consumption due to economic growth. As one of the countries experiencing the most severe water stress in the world, with a per capita available water ratio of 5 m<sup>3</sup> per year, Kuwait relies heavily on seawater desalination to meet a consumption demand 34 times higher than its natural supplies. In 2017, the Kuwaiti authorities reaffirmed their commitment to expanding water desalination infrastructure, with a focus on sustainability, including the use of solar energy.

## PRESERVING RESOURCES

For the **Az Zour** North plant, delivered in 2016, Veolia opted for thermal desalination, also known as multieffect distillation (MED). The unit has the capacity to produce 486,500 m<sup>3</sup> of desalinated water per day. For the Az Zour South plant, inaugurated in 2015, Veolia chose membrane desalination through reverse osmosis. The unit has a capacity of 136,600 m<sup>3</sup> of water per day. The desalinated water is sourced from the cooling water of the adjacent power plant. This virtuous solution creates a local circular economy loop while reducing the consumption of resources.



Az Zour North:

**20%**  
**of the installed capacity**

in Kuwait in the long term



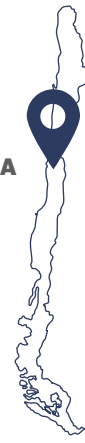
Az Zour South:

**136,600 m<sup>3</sup>/day**  
**of desalinated water**

produced through reverse osmosis

# In La Farfana, Chile, transforming a wastewater treatment plant into an "ecofactory"

LA FARFANA



*In Chile, Veolia has transformed the Wastewater treatment Plant in the Santiago region into a "ecofactory". This model, beneficial for human health and allows us to have purified water in condition to be used for reuse in agricultural irrigation, uses innovative processes to purify wastewater, while also converting sewage into green energy and fertilizer for agriculture.*

## SAVE WATER RESOURCES IN A CONTEXT OF WATER STRESS

With climate change, water resources are becoming increasingly scarce and degraded in many regions. Wastewater treatment plants (WWTPs) help to preserve this resource. However, these facilities are very energy-intensive: according to the International Water Association, wastewater treatment plants account for 1 to 3% of global energy consumption. They also generate sewage sludge, which has long been considered harmful material. In this context, **Aguas Andinas**, the company managing water and sanitation for the Metropolitan Region of Santiago in Chile, has called on Veolia to transform its wastewater treatment plant into a more virtuous model.

## ZERO WASTE, LOW ENVIRONMENTAL IMPACT AND ZERO FOSSIL FUEL CONSUMPTION

In response to these issues, Veolia has developed an innovative concept that allows for the purification of wastewater from the La Farfana treatment plant, while converting sewage sludge in products for agriculture. Thanks to the digestion and methanization process of sewage sludge, the plant produces green energy in the form of biomethane and heat. Thereby, La Farfana covering the gas needs of 140,000 inhabitants. We aim to one day achieve energy autonomy and that starts today with purchasing of green energy if needed to additional power us. Furthermore, in line with the circular economy, the factory also provides local farmers with fertilizers, and the treated water can be reused for various purposes, including irrigation. The La Farfana site, a true ecofactory, thus generates low environmental impact, and zero fossil fuel consumption.

## AMONG THE LARGEST WASTEWATER TREATMENT SITE IN LATIN AMERICA

In addition to generating new resources and decarbonizing its energy consumption, the La Farfana site fulfills its primary role of purifying wastewater. Associated with the Mapocho Trebal wastewater treatment plant, it contributes to the treatment of wastewater from the 8 million inhabitants of Greater Santiago, with health benefits. The Ecofactories of Gran Santiago have thus received the "Impulse for Change" recognition at COP24 for their contribution to planetary health.



**0**

-  **waste**
-  **fossil fuel consumption**
-  **environmental impact**

Strategic program  
2027  
**GreenUp**



**10 Mtons**  
of hazardous waste &  
pollutants treated in 2027

---







# 2.3

## DEPOLLUTION

### Toward healthy cities to live in

**76% of the world's population believes that the risk of pollution to resources and its impact on health is serious and immediate.** The emergence of new pollutants in water, air, and soil (micropollutants, solvents, heavy metals, hazardous waste, etc.) maintains this concern and makes fighting all forms of pollution a societal priority for territories, municipalities, and industries.

In light of this situation, regulations are rapidly evolving and standards are becoming more stringent, requiring communities, economic actors, and citizens to adapt their activities and lifestyles to make them cleaner.

In a healthy city to live in, the impact of human activities on the environment (soil, air, water) is limited to mitigate risks, protect natural environments, promote the development of biodiversity reservoirs, and preserve water and air quality.

Sanitation activities, **protective solutions around water catchment areas, development of urban heating networks and biomass sectors, collection and**

**treatment of waste, including hazardous waste, and ecological rehabilitation of soils, etc.,** address these challenges aimed at **reducing pollutant emissions into the atmosphere and water, increasing the circularity of water and waste resources, optimizing land use conditions, and protecting environments and biodiversity.**

Because a healthy city means good health and a better quality of life for its residents.

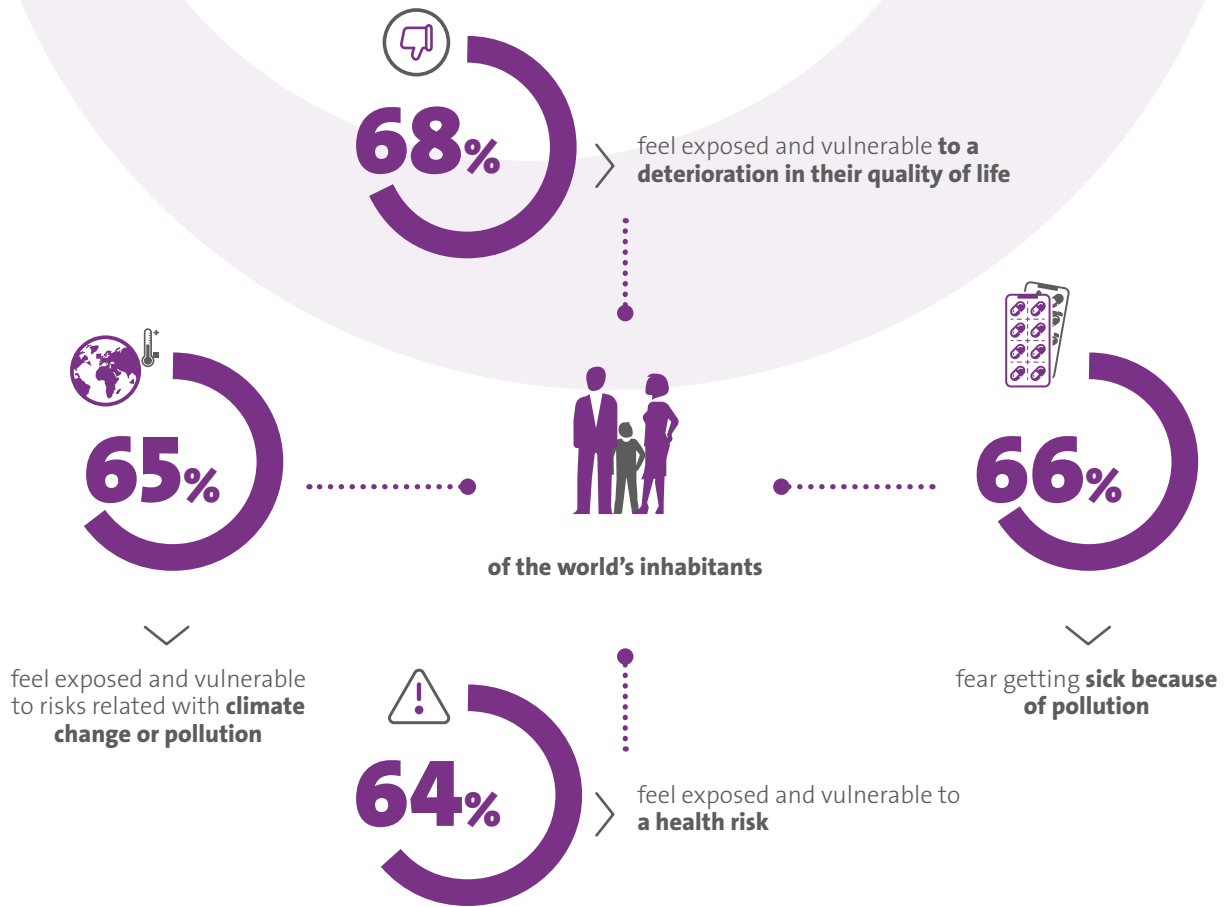
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**As part of our GreenUp plan, we are committed to processing 10 million tons of hazardous waste and pollutants by 2027.**





# The world's inhabitants express concerns that are aligned with **your actions in response to climate change and pollution**



## ARE IN FAVOR OF SOLUTIONS COMBINING SUFFICIENCY AND TECHNOLOGY





## In Switzerland, **treating micropollutants** to clean up water resources

*In September 2019, ARA Altenrhein became the world's first wastewater treatment plant to be equipped with a combined ozonation and granular activated carbon system for optimal and cost-effective treat of micropollutants. This solution was implemented by Veolia.*

### **IMPROVING WATER QUALITY**

In Switzerland, the Water Protection Ordinance requires an average purification rate of 80% for certain indicator substances (household chemicals, pharmaceuticals, and biocides), as well as the need for a process to treat trace organic substances. To meet these requirements, a program to enhance the treatment process using the best available technologies in the industry was implemented at the ARA Altenrhein wastewater treatment plant (120,000 population equivalents).

### **THROUGH INNOVATIVE PROCESSES**

ARA Altenrhein has become the world's first wastewater treatment plant to be equipped with combined ozonation and granular activated carbon systems for optimal and cost-effective removal of micropollutants. The combination of these two processes ensures a minimum removal efficiency of over 80% for the 12 target micropollutants defined by Swiss regulations, ranging from pesticides to pharmaceuticals and biocides.

Improving water quality contributes to the health and quality of life, of the inhabitants of a region.



**+ 80%**  
treat of the 12 **target**  
**micropollutants**

# In Reggio Calabria, Italy, monitoring the indoor air quality of the National Archaeological Museum to ensure healthy air for its visitors



*Committed to playing a central role in improving indoor air quality worldwide, Veolia has deployed innovative smart air quality control technologies within the **National Archaeological Museum of Reggio Calabria, Italy**. These technologies preserve the comfort and health of visitors while optimizing energy consumption and preserving works of art.*

## **A PUBLIC HEALTH ISSUE**

Fighting indoor air pollution is a major public health challenge. Spending over 80% of our time indoors, we are affected by pollutants present in buildings, which are linked to construction materials, furniture, and occupant activities. To combat this invisible pollution and ensure healthy air for all, Veolia has developed a comprehensive range of solutions for air quality. These solutions enable continuous air quality monitoring and control of dedicated installations in all types of buildings, including homes, schools, offices, and cultural venues. As part of the "Consign Musei" agreement, which organizes the allocation of integrated services in cultural venues, Veolia has been engaged to monitor the air quality within the National Archaeological Museum of Reggio Calabria, in southern Italy. This prominent Italian museum, housed in the Piacentini Palace, is renowned for the Riace bronzes, two masterpieces of Greek statuary dating back to the 5th century BC. It welcomes over 91,000 visitors annually.

## **INNOVATIVE TECHNOLOGIES**

The implemented technologies allow for the management of all building services (air conditioning, lighting, surveillance, fire system, access control, electrical and thermal refrigeration systems...), simultaneous production of cold and hot fluids, filtration of harmful particles, with particular attention given to the performance of the filtration system at the entrance of the bronze zone. The objective is to ensure visitor comfort and preservation of the artworks. The intelligent control of the installations is based on continuous monitoring of their performance. The collected data from the entire building, formalized in customized dashboards, enables the maintenance of air quality levels and also improves energy efficiency.



**10,000 m<sup>2</sup>**  
air-conditioned

**12**  
air handling units



# In New Jersey, United States, treating PFAS in water for healthier communities

*In 2021, Allendale, New Jersey was facing an exceedance of the State limit for PFAS in its water system and, like many municipal systems, the borough lacked the expertise and the capital to address it. Voters decided to sell the system to Veolia, which has demonstrated its excellence in the treatment of micropollutants.*

Perfluoroalkyl and polyfluoroalkyl substances (PFAS) are a family of more than 4,700 synthetic chemicals commonly used in the production of industrial products, firefighting foam, nonstick cookware, stain resistant fabrics and many other consumer products. Because of their widespread use, these substances have become omnipresent in the environment and can seep into water sources, potentially posing health risks to humans. Managing these micropollutants in drinking water is a major challenge.

In New Jersey, Veolia has taken a proactive approach to PFAS. Years before state regulations took effect, Veolia began extensively testing its systems and installing treatment systems where necessary. Unlike many other utilities in New Jersey, Veolia's efforts mean its water systems statewide remained in compliance with health and safety standards. That's when Allendale turned to Veolia to solve its PFAS exceedance.

## LEADING THE WAY IN PFAS REMOVAL

Veolia's expertise in water treatment and distribution, along with its experience and ability to finance large-scale projects such as PFAS treatment, led Allendale to sell its drinking water system to Veolia.

***"Veolia will make necessary investments and improvements in our water distribution system while maintaining low rates, and the residents of Allendale will continue to receive excellent service from Veolia"*** stated **Ari Bernstein**, the Mayor of Allendale.

Eight months after purchasing the Allendale system, Veolia had installed a PFAS treatment plant for three wells in the municipality and was nearing completion of a treatment system at another well. Both are now online. Statewide, Veolia now has twelve systems in operation and 14 other PFAS treatment systems in development. Veolia has already treated a cumulative million m<sup>3</sup> of water in New York, New Jersey and Pennsylvania across more than 30 sites, with dozens more underway. With the new offering BeyondPFAS, Veolia is at the forefront of the fight against PFAS in drinking water.



**12** operational treatment systems across New Jersey

**14** additional treatment systems under design/construction

# In Taiwan, facilitating the redevelopment of a highly contaminated oil refinery by soil and groundwater remediation



*As a prominent soil and groundwater remediation firm in Taiwan, Veolia provided highly efficient engineering management and practices for treating 412,000 tons of petroleum hydrocarbon contaminated soil within 11 months. This effort assisted the Kaohsiung City Government in repurposing the land into a high-tech industrial park.*

## REDEVELOPMENT OF CONTAMINATED LAND

The CPC Kaohsiung oil refinery in Kaohsiung, Taiwan, was shut down in 2015 due to serious air, soil, and groundwater pollution. The refinery covers 177 hectares of land and was originally planned to be remediated and decommissioned by 2033. The Kaohsiung City Government committed to facilitating the decommissioning process and implemented several projects for the remediation of the entire refinery. Veolia successfully remediated one of these projects, covering an area of 9.2 hectares, in 458 days. Through these projects, the Kaohsiung City Government can expedite the redevelopment of this land by at least 7 years. The land will be transferred to a manufacturing hub for high-tech industries. In line with industrial transformation and regional development, it will create nearly 17,500 jobs and an annual output value of approximately US\$ 5 billion, estimated by the Kaohsiung City Government.

## HIGHTLY EFFICIENT REMEDIATION

Through Veolia's highly efficient engineering management and methods, approximately 5.5 hectares of heavily contaminated soil were remediated within 11 months. The contaminated soil was excavated and then on-site treated using low-energy consumption remediation techniques such as soil washing and bio-pile treatment. Among these, 134,000 tons of soil were treated using soil washing and 278,000 tons using bio-pile treatment. A total of 412,000 tons of contaminated soil treated, with off-site thermal treatment minimized to 7,000 tons. After treatment, the qualified soil was backfilled into the site, ensuring sustainable utilization of soil resources. In addition to the excavation zone, approximately 0.5 hectares of mildly contaminated areas were treated using multiple in-situ remediation techniques, including bio-sparging, soil vapor extraction, and double packer injection (DPI). Veolia profoundly understands these techniques' advantages, disadvantages, and limitations. Through the professional design, excellent operations, regular monitoring, and appropriate adjustments, the in-situ remediation was successfully completed within 9 months.

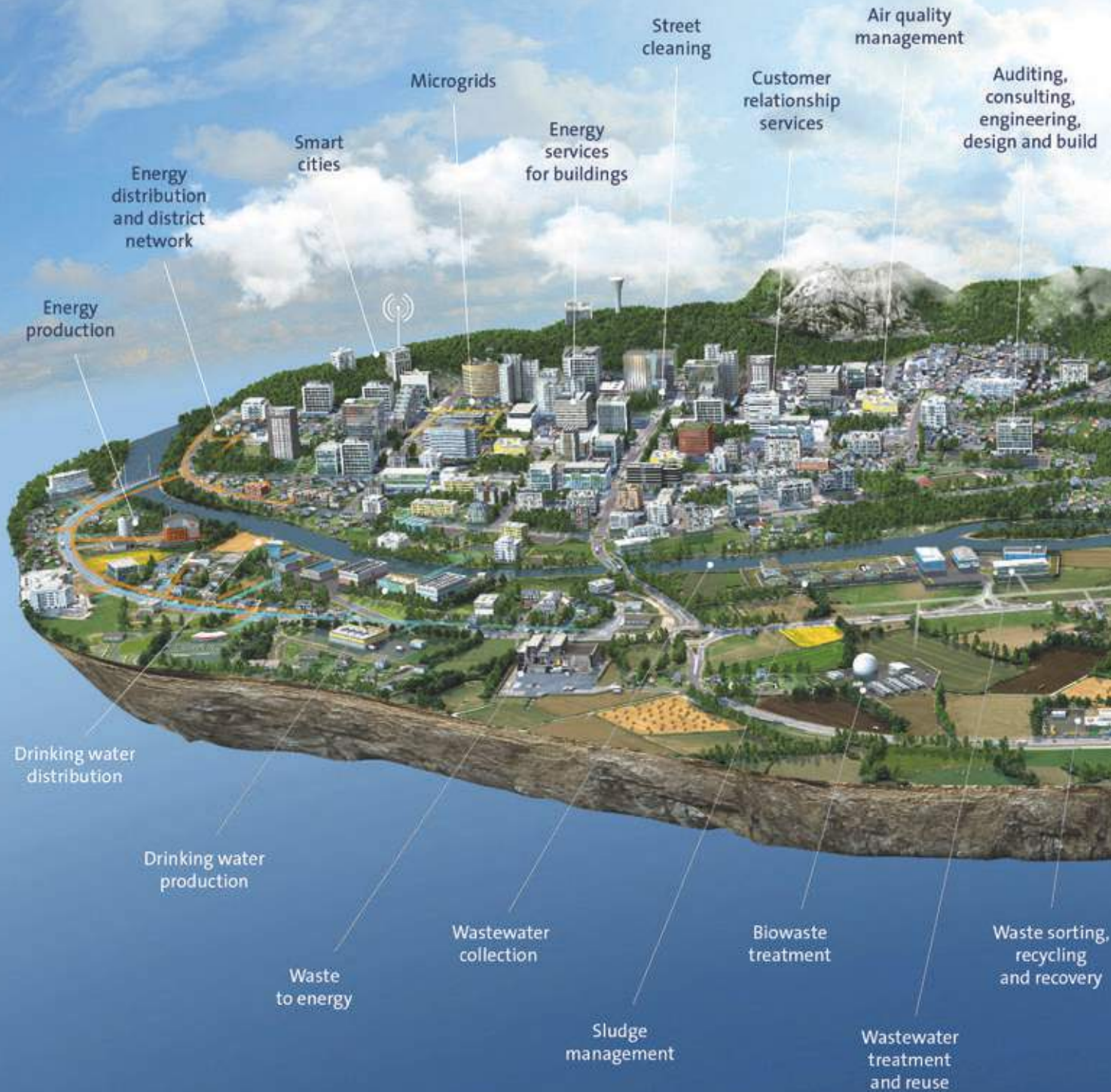


**412,000 tons**  
of contaminated soil excavated treated  
and backfilled within 11 months

**9.2 hectares**  
soil and groundwater contaminated site  
on-site, off-site, and in-situ **efficiently**  
treated within 458 days

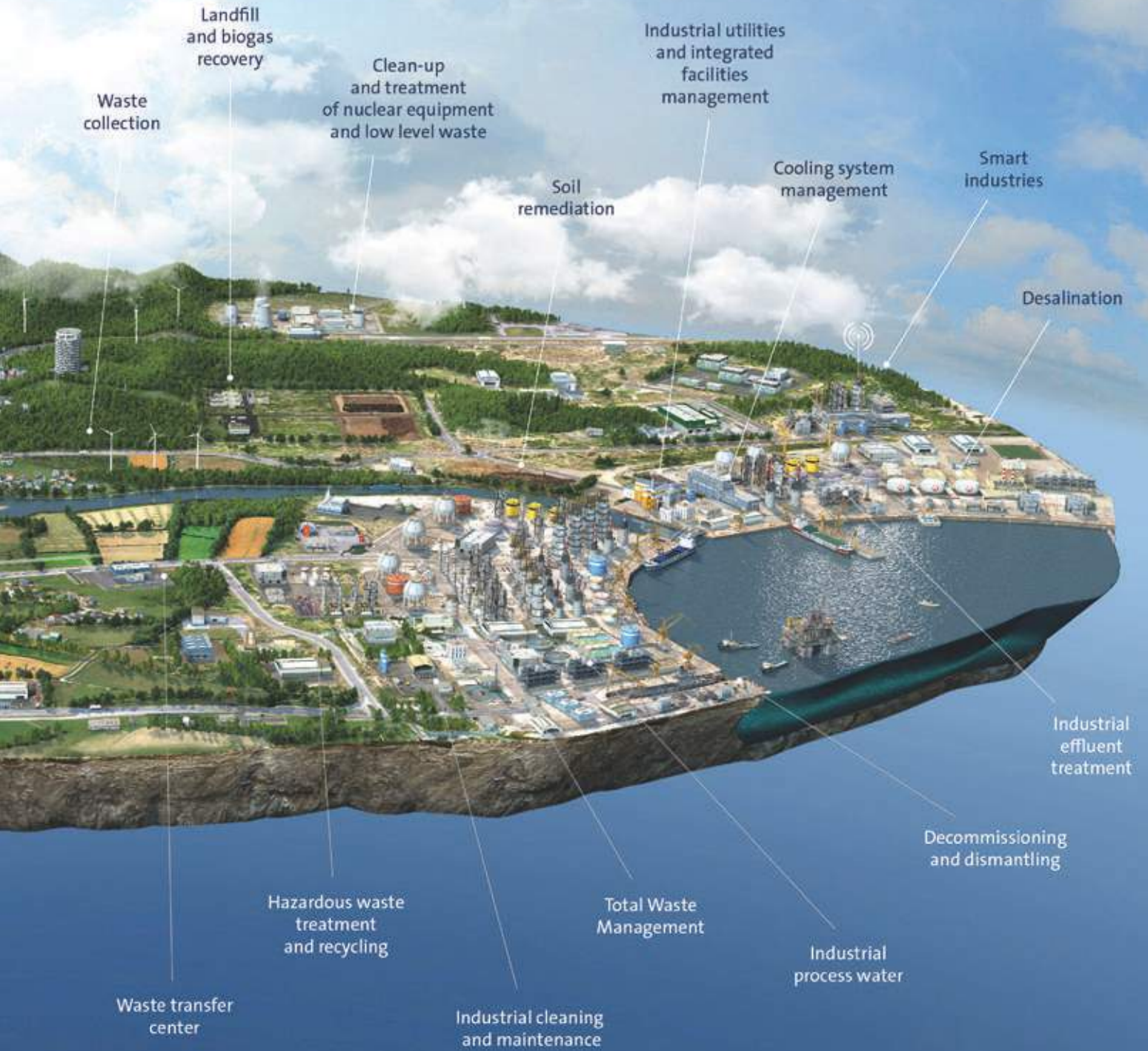
# AND MANY MORE...

...solutions deployed worldwide to support the Ecological Transformation





activities.veolia.com



# 3. BUILDING

the world of tomorrow  
with you





## Ecological transformation is our purpose

Ecological transformation is about taking action to reconcile human progress and environmental protection.

We develop and implement solutions in territories that depollute and preserve our vital resources from depletion, solutions that decarbonize our lifestyles and production methods, and adapt them to the consequences of climate change.

We mobilize ourselves, all around the world, respecting each culture, to improve the health and quality of life of human communities.

**At Veolia, we aim to be useful to as many people as possible by addressing economic, social, and environmental issues as an inseparable whole.**

# INNOVATING for your local area

## INNOVATION IS ONE OF THE PILLARS OF ECOLOGICAL TRANSFORMATION

To combat climate change, address pollution, save and regenerate resources, Veolia harnesses the power of innovation at all levels of the Group. We leverage our innovation capabilities to serve your territories, accelerate your ecological transformation, and prepare for the future.

### DECARBONIZATION



**6 TWh of biogas**  
produced (2022) from waste and  
wastewater



Already **15 sites** in waste and wastewater  
biomethane

### SAVING AND REGENERATION OF RESOURCES



**490,000 tons**  
of recycled plastics (2022)



**1 billion m<sup>3</sup>**  
of reused water (2022)

### DEPOLLUTION



**8 million tons**  
of hazardous waste treated annually

**300 installations**  
in 29 countries



**Solutions to control Indoor  
Air Quality**

where we spend more than

**80%** of our time

# 6

## strategic axes for innovation



### Decarbonized and decarbonizing territorial energy

On-site green energy production, biogas valorization into hydrogen and other alternative energies, 4<sup>th</sup> and 5<sup>th</sup> generation heat networks, **recovery of waste heat energy**, electrical flexibility



### New Loops of Materials, Metals and Plastics

Recycling of batteries and other strategic metals, eco-design, advanced plastic recycling, solvent regeneration



### Health and New Pollutants

Treatment of Micropollutants in Water, Soil, and Waste, Treatment of Microplastics in Stormwater and Sludge, Improvement of Indoor Air Quality



### Decarbonization

Production and use of alternative fuels, reduction of greenhouse gas emissions (GHG) at the source (waste sorting, combustion efficiency)



### Water Resources and Climate Adaptation

Water reuse for cities, agriculture, and industrial water cycle management, biodiversity restoration, nature-based solutions...



### Valorization of Organic Matter

Bioconversion, production of sustainable organic fertilizers & biostimulants



An ecosystem based on

**8**

innovation hubs



**14**

R&D Centers



**630**

people dedicated full-time to research and innovation



**More than  
4,800**

patents filed in 2022

# TRANSFORMING what matters

## TOWARD SUSTAINABLE IMPACT FOR ALL

How to implement and evaluate the ecological transformation of a city?

By considering all stakeholders, the available resources within the territory, and striving to reconcile economic, social, and environmental challenges as an inseparable whole. This vision of “multifaceted performance” has been embraced by Veolia since 2020 and placed at the heart of its strategy. It can be applied to “city policy” to build a territory where living and working conditions are favorable.

### TRANSFORMING WHAT MATTERS

**Supports the development**  
of your local areas.



**Addresses the climate emergency**  
and its impacts on human activities.



**Develops the circular economy**  
sustainably managing water resources,  
depolluting to protect the environment and  
biodiversity...



**Acts to reconcile**  
human progress and environmental  
protection.

### THANKS TO VEOLIA AROUND THE WORLD <sup>(1)</sup>



**1 billion m<sup>3</sup>**  
**of**  
reused wastewater



**91%**  
of Veolia’s expenses  
were reinvested locally



**15.3 million**  
**tons of CO<sub>2</sub>**  
avoided

### Validation of our Accelerated Decarbonization Trajectory by SBTi <sup>(2)</sup>

#### DJSI

(Dow Jones Sustainability Indices)  
Inclusion in DJSI World  
and Europe indices

#### S&P Global

**83/100**,  
1<sup>st</sup> of Multi and Water Utilities <sup>(3)</sup>

#### CDP Climate change

Leadership, A-

#### CDP Water security

Leadership, A-

Veolia’s  
2023 ESG  
RATING

**Ecovadis**  
**68/100 <sup>(4)</sup>**

<sup>(1)</sup> Figures as of December 31, 2023.

<sup>(2)</sup> initiative Science Based Targets, July 2024

<sup>(3)</sup> CSA score as of December 22, 2023.

<sup>(4)</sup> July, 2024.



1. Our stakeholders
2. Our performance
3. Our commitments
4. Our objectives

Veolia's multifaceted performance approach makes it possible to define action priorities that reconcile environmental, societal, social, financial, and commercial issues in a search for a balance of sustainable impact for all.

# PREPARE THE FUTURE with us

At Veolia, we are 218,000 resourcers, entrepreneurs of ecological transformation around the world. Present on all five continents, we can guarantee you a close relationship and solutions tailored to your territory.

We can help you transform your city starting today.

Seize the opportunity to build a low-carbon, resource-rich, and healthy city.



**GET INVOLVED, TURN THE TIDE! <sup>(1)</sup>**



**218,000**

employees



**45.3 billion euros**

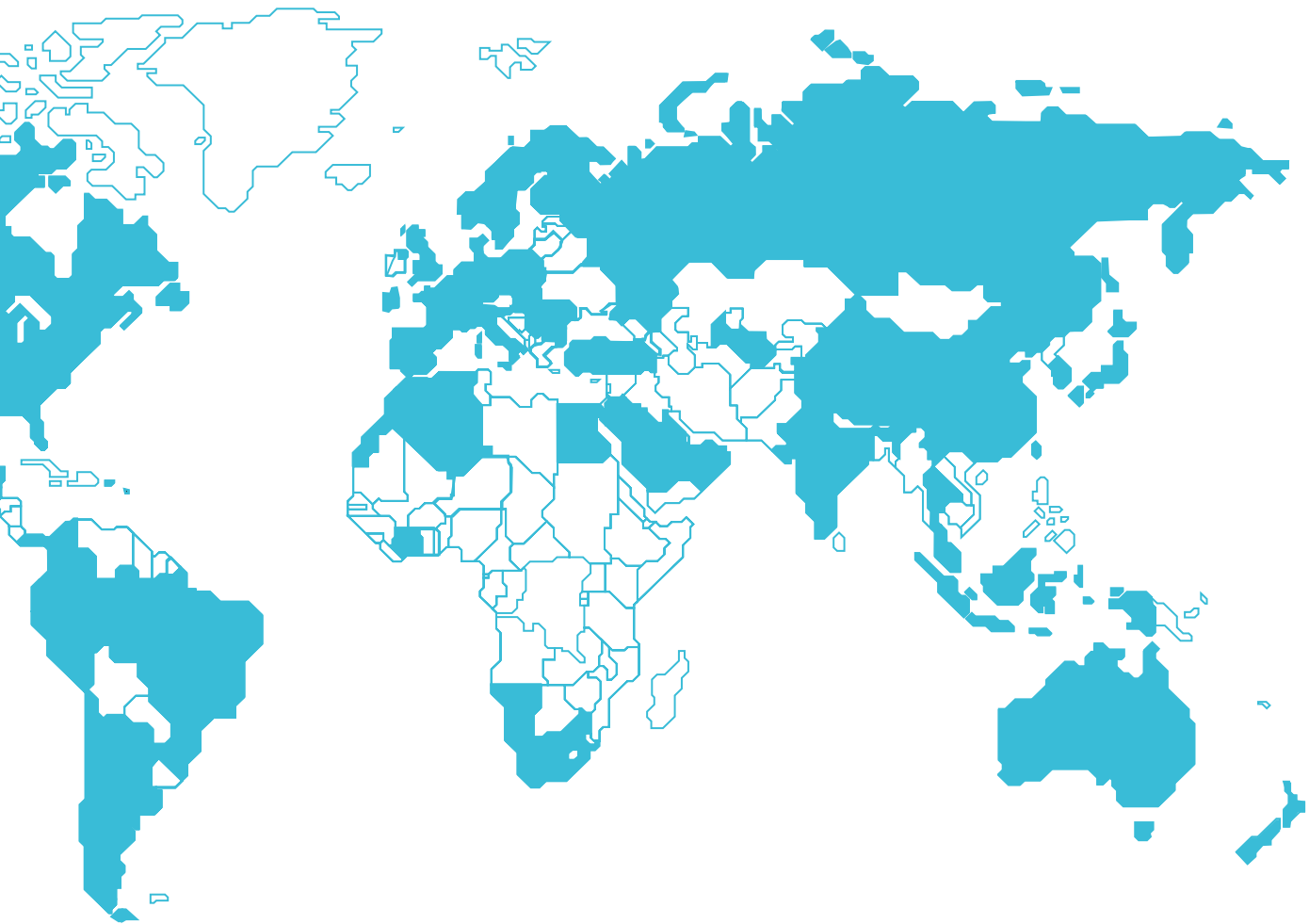
in revenue in 2023

<sup>(1)</sup>Figures as of December 31, 2023.





**By your side**  
on all five continents





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With Veolia, the ecological transformation of your territory is within reach. Let's combine your knowledge of your local area with the expertise of our teams and the concrete and achievable solutions we offer to build a low-carbon, sustainable, healthy, resilient, and attractive city.

## CONTACT US

Wherever you are in the world, we have teams near your location. They are at your disposal to help you achieve in your ecological transformation.



Resourcing the world  **VEOLIA**