ACHIEVING THE SUCCESSFUL ECOLOGICAL TRANSFORMATION OF YOUR BUILDINGS TOGETHER



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EDITORIAL



Let's work together for buildings that are more sustainable, more resilient, more attractive, and healthier, offering a higher quality of life, greater comfort, and improved health to their occupants and users.»

Our buildings can be reimagined!

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 real estate portfolios to reinvent themselves by imagining the buildings of tomorrow.

Since its creation 170 years ago, Veolia has been the world champion of ecological transformation, using innovation to protect health, purchasing power, and natural resources. Today, we have over 218,000 employees, hard at work every day around the world. This local presence, and our ability to combine our three businesses in water, waste, and energy, are major assets helping buildings decarbonize, depollute, and preserve resources. As are our innovative technologies and digital energy management solutions based on generative artificial intelligence.

And we can prove it! In 2023, 15.5 million tons of CO_2 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.

The building sector occupies a strategic place in the trajectory towards carbon neutrality, which aims to decarbonize our daily lives, mitigate the effects of climate change and improve our quality of life by 2050.

With GreenUp, Let's make the future desirable together!

Estelle Brachlianoff CEO of Veolia To address this issue, at the heart of our strategic program is a commitment. A commitment to find, with you, the most effective solutions: to transform the way we think about buildings, to guarantee the quality and comfort of the spaces in which we live, and to reduce your environmental footprint, while preserving your economic performance.

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 together, hand in hand.

At stake are buildings that we've made more sustainable and resilient together. Buildings that can adapt to the impacts of climate change, the growing pressure on resources, and market volatility. More energy-efficient and attractive buildings that offer a higher quality of life, greater comfort, and better health to their occupants and users.

All over the world, Veolia puts its teams, solutions, standards of excellence, and multi-faceted performance approach at your service to help you shape your ecological transformation. So, together, let's work for more sustainable, resilient, and attractive buildings.

1 PANSEO your perspective on your buildings



RMING



Veolia stands ready to be your sustainability partner

As a global leader in sustainability, in ecological transformation, Veolia relies on a very broad portfolio of concrete solutions, as well as its constant ability to innovate, to help you identify the transformation opportunities of your buildings.

Your buildings are facing major risks:

- The increase in energy and operation costs.
- Non-compliance with regulations.
- Or the decrease in attractiveness, which leads to the risk of a decrease in the occupancy rate or even local unemployment and the devaluation of these assets.
- The need to continually refresh and maintain properties.

By changing perspective, we can construct buildings:

- Safer and healthier to live in;
- More moderate in their water and energy consumption;
- More financially profitable, as they are more economical and more efficient;
- More sustainable thanks to the supply of renewable energies;
- Easier to operate, maintain, and manage thanks to smart technologies;
- More flexible;
- More attractive, as they emit less CO₂;
 Better valued in the long term.

The challenges you face in managing your buildings thus become new opportunities.

Changing your perspective can turn your constraints into opportunities for growth. Your buildings are not just consumers of energy and water that need to be supplied. They are not just producers of waste that need to be eliminated either. They offer resources that can be valued, reused, transformed into sources of savings, sustainable and local green energy, secondary raw materials.

Veolia supports you in the ecological transformation of your buildings, by combining its complementary businesses in water, waste and energy, in order to meet your clients' expectations and optimize your resources, in an economic, ecological and societal approach.

Let's work together for sustainable business and quality of life.





This is not **just wastewater...**

... it is a sustainable source of heating and cooling **for these buildings.**

Issy-les-Moulineaux, France

LOW CARBON LOCAL ENERGY LOOP

Issy Energies vertes opéré par Oveolia

wastewater
890 kW



Recovery of heat from the wastewater collector GEOTHERMAL



Recovery of heat from the groundwater table

Heat and cold networks

\$\$\$\$ • • • • • • • 1,270 housing will be served



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

...it is a local energy source for the buildings of tomorrow.



2 the ecological transformation of your real estate portfolio together





Veolia opens up a world of possibilities

Veolia helps you determine your transformation trajectory: what actions should be taken? Where? How? And when? Our approach aims for multifaceted performance, taking into account all economic, financial, human and environmental issues.

Thanks to operational, affordable, and replicable solutions in the fields of water, energy, and waste, Veolia makes your buildings more sustainable and marketable.

The solutions we implement put you in the driver's seat. Your real estate portfolio becomes less and less of a CO₂ emitter. It becomes more agile and gains resilience in the face of climate change.

The ecological transformation of your buildings does not restrict you, it opens up a world of possibilities.

Your portfolio becomes part of the community and operates more efficiently.

It improves quality of life.

It is future-ready and constantly evolving.





2.1 DECARBONIZATION Toward Net Zero buildings

In its sixth Assessment Report, the IPCC estimates that global warming will reach 1.5 °C by the early 2030s. Rapidly reducing global net CO_2 emissions to zero appears to be one of the preferred solutions to limit warming to 1.5 °C. At the same time, efforts must be intensified to adapt infrastructures and lifestyles to the new climate reality.

Accelerating the energy efficiency of buildings is essential. Worldwide, buildings are responsible for 34% of greenhouse gas emissions related to energy.

Faced with these challenges, we are on the front line to promote emission-neutral buildings by implementing solutions aimed at:

- Increasing the efficiency and energy performance of your facilities.
- Producing more local renewable and recovery energies.

- Innovating to capture CO₂ from your facilities.
- **Supporting the reduction** of your water consumption and waste production.

Veolia offers decarbonization solutions for each of its businesses, with the ambition to eliminate 18 Mtons of CO₂ eq by 2027 in accordance with the objectives of its GreenUp strategic program.

These solutions constitute as many levers of action to embark your real estate portfolio on the trajectory of carbon neutrality.



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



are willing to pay a little more for energy if it is produced locally and from non-recyclable waste and biomass

in order **to secure their territory's energy supply** in order **to reduce CO₂ emissions** in order to reduce dependence on fossil fuel-producing countries



In Milan, Italy, reducing buildings' energy consumption to lower their greenhouse gas emissions

The city of Milan, Italy, has entrusted **Veolia** with the task of optimizing the energy efficiency of its municipal buildings, to further reduce their consumption of fossil resources and their greenhouse gas emissions, while preserving the comfort of their occupants.

The energy consumption of buildings is one of the challenges related to ecological transformation, representing over a third of global CO_2 emissions. The project has allowed for almost total elimination of dependence on fossil fuels and improving the energy efficiency of buildings, thus strengthening the resilience of the territories. As part of the EPC contract, the city of Milan entrusted Veolia with the task of reducing the energy consumption of its 1,200 municipal buildings used for various purposes: offices, schools, museums etc.

MONITORING & OPTIMIZATION

To achieve this goal, investments have been made to convert the heating system from oil to natural gas and install almost 7,000 thermostatic valves. Depending on the characteristics of the buildings, optimized management of systems allows for average savings of 25%, while ensuring comfort and well-being for users. Additionally, Siram Veolia has proposed its digital solution Hubgrade to the city of Milan, a platform that combines the human experience of the Veolia team with generative artificial intelligence in order to:

- Reduce building consumption by identifying energy waste, optimizing the operation of heating, air conditioning, lighting, and ventilation systems.
- Manage the quality of indoor air.
- Offer reporting mechanisms that allow the customer to measure the operational and environmental excellence of the buildings.



HEALTH AND QUALITY OF LIFE

The deployment of these solutions results in environmental, societal, and financial benefits:

- Reduction of CO, emissions.
- Energy and financial savings.
- Enhancement of the building's heritage value.
- Improvement of the health and well-being of users, through the management of air quality, controlling the risks of legionnaires' disease, and maintaining a constant and comfortable temperature.



In Birmingham, United Kingdom, reducing the carbon footprint of one of England's largest university hospitals through heat pump and solar energy technologies



The UK's public health system (NHS) aims to become the world's first "net zero" national health service. In this context, Veolia is supporting the **Queen Elizabeth Hospital and Good Hope Hospital in Birmingham** in its decarbonization trajectory, by reducing its dependence on fossil fuels and the energy consumption of buildings.

SAVE 3,847 TONS OF CO, PER YEAR

As the world's largest public health system and responsible for approximately 5% of Britain's CO₂ emissions, the British NHS (National Health Service) launched the "For a Greener NHS" program in January 2020, aiming to achieve carbon neutrality by 2040 for the emissions the NHS controls directly. The achievement of this goal involves a series of measures focusing on the energy consumption of buildings, waste reduction, the use of electric vehicles, etc. In this context, Veolia was approached by the University Hospitals Birmingham NHS Foundation Trust, one of the largest university hospitals Trusts in England, to assist the Queen Elizabeth Hospital, and Good Hope Hospital, located in Birmingham, in reducing its carbon footprint, saving 3,847 tons of CO₂ per year.

REPLACE FOSSIL FUELS WITH DECARBONIZED ENERGY SOURCES

Implemented as part of an Energy Performance Contract covering the hospitals, the work carried out by Veolia focused on replacing the heating system powered by fossil fuels with with 1.65 MW of multi-stage heat pump systems. To maximize the efficiency of the new system, 11,500 m² of roofing have been insulated and control systems optimized. Installation of a 314 kWe solar array will further help to decarbonize the hospital's electricity supply, by adding renewable energy. Moreover, electricity consumption will be reduced by fitting more than 6,100 LED lights in the buildings.

ENERGY EFFICIENCY AND PATIENT COMFORT

"As the NHS became the world's first health service to commit to reaching carbon net zero, these projects will help the Trust meet this target by cutting reliance on fossil fuels and will advance their progress to eliminate carbon emissions by 2045. Our whole building approach, and expertise gained over 85 years of delivering energy efficiency to healthcare, will deliver major benefits including savings on critical energy costs, reduced emissions, and enhanced patient facilities. By working in partnership we will enable the Trust to meet their sustainability goals and deliver a net-zero future for healthcare in the UK," comments Gavin Graveson, Veolia Senior Executive Vice President Northern Europe Zone





In Prague, Czech Republic, reducing energy and water consumption in a hospital to save resources

As part of a large-scale energy performance contract, Veolia has implemented solutions that enable **Bohnice Hospital** in Prague to reduce its energy consumption by 30%, as well as its water consumption. This has not only saved resources but also resulted in financial savings for the hospital.

THE LARGEST ENERGY PERFORMANCE CONTRACT IN THE CZECH REPUBLIC

The European directive on energy efficiency requires a reduction in energy consumption in buildings by at least 1.9% per year. To achieve this energy efficiency and decarbonization goal, the Czech Republic needs to speed up the renovation of buildings within its territory. In this context, the Bohnice Psychiatric Hospital in Prague has decided to carry out an extensive modernization program for its facilities and its energy management system. In partnership with D-Energy in a consortium, Veolia has signed the largest energy performance contract to date in the Czech Republic with the representatives of the establishment. The savings guaranteed under this ten-year agreement amount, indeed, to more than 30% of the initial consumption.

A RENOVATED AND FULLY DIGITIZED ENERGY SYSTEM

With a total budget of more than 25 million euros including VAT (649,953,633 CZK), the project includes structural work and the deployment of various services and technologies. As such, over 3,000 windows and doors have been replaced, more than 20,000 square meters of building walls, roofs, and attics have been insulated, and 10 kilometers of piping have been replaced. A new 8 MW transfer station has been connected to the existing thermal power plant. The heating systems have been optimized, with the existing lighting largely replaced by more efficient LED lamps. A new measurement and control system, which involved the construction of a 5-kilometer optical fiber network, has been deployed...

6,350 MWH OF ENERGY AND 7,750 M³ OF WATER SAVED EACH YEAR

The implementation of these solutions allows Bohnice Hospital to save, each year, 6,350 MWh of energy and 7,750 cubic meters of water. This reduction in consumption contributes to environmental





goals of preserving increasingly scarce resources and reducing CO₂ emissions. The project led by Veolia also contributes to the energy self-sufficiency of the Czech Republic as well as the achievement of European decarbonization goals. These resource savings also have a significant budgetary impact for the hospital. At the 2021 reference price, the bill reduction amounts to more than 580 000 euros (14.7 million Czech crowns) per year and is expected to be even higher, due to the increasing prices of energy and water. In total, over 10 years, Bohnice Hospital will save at least 5.8 million euros (147 million Czech crowns).



In Brisbane, Australia, refreshing a campus with solar energy to reduce electricity consumption and CO₂ emissions

This is a first in Australia, **the University of Sunshine Coast** uses renewable energy to charge a thermal battery and keep the entire campus cool. This innovative solution deployed by Veolia allows to save electricity and CO, emissions.



Located north of Brisbane in the state of Queensland, the University of the Sunshine Coast (USC), the youngest in Australia, is committed to achieving carbon neutrality by 2025. Due to a warm and humid subtropical climate, it needs to cool buildings to maintain the comfort of students, teachers, and university staff. This air conditioning requires significant electricity consumption. Placing innovation at the heart of its teachings, USC has called on Veolia to provide an innovative response to the dual challenge of resource preservation and the fight against climate change.

A 2.1 MW PHOTOVOLTAIC POWER PLANT

The proposed solution by Veolia involves the installation of 6,500 photovoltaic solar panels on the campus rooftops and on the parking shades. This 2.1-megawatt system produces enough electricity to cool the equivalent of almost 2 Olympic swimming pools of water, which act as an 8-megawatt battery. The cooled water is stored and used for air conditioning, which represents the highest electricity consumption on campus. In addition, an additional 2,000 megawatt-hours of electricity are fed back into the Queensland energy network.

RESOURCE PRESERVATION AND SAVINGS AT MULTIPLE LEVELS

This arrangement results in multiple benefits for USC:

- A 40% reduction in electricity consumption, thanks in particular to an advanced Centralized Technical Management (CTM) control system to manage electricity demand in real time.
- Saving 802 m³ of drinking water by using the lake water on the campus for the cooling towers.





- A saving of about 100 million Australian dollars over the 25 years of the project.
- A saving of 100,000 tons of CO₂ over 25 years, by replacing grid electricity with solar energy and feeding the surplus solar energy back into the grid.
- The project has been awarded several prizes, including the prestigious Out of the Box prize of the Global District Energy Climate Awards in 2019.







2.2 Saving and regeneration of resources

Toward buildings rich in opportunities

The World Forum on Buildings and Climate resulted in the adoption of the Chaillot Declaration, which should enable progress towards a rapid, fair, and efficient transition of the sector.

According to the text, the building and construction sector is responsible for 34% of global energy consumption and generates 100 billion tons of waste each year.

Faced with these challenges, it is urgent to initiate the ecological transformation of buildings.

A resource-rich building is more energy-efficient thanks to innovative digital solutions using generative artificial intelligence.

A resource-rich building produces decarbonized renewable energies, by valuing or recovering household waste, wastewater and fatal energy. A building can even produce more energy than it consumes and become an energy positive building. A resource-rich building protects the water resource and secures its access in tense areas, by saving water, reusing treated wastewater, and raising awareness among occupants about good behaviors.

A resource-rich building preserves natural resources as much as possible, **considering all material flows as potential resources and creating new local supply flows.**

A resource-rich building **recycles construction materials** to transform them into new raw materials used in the construction of future buildings.

With the global commitment to regenerate 1.5 billion cubic meters of fresh water by 2027, as part of its GreenUp strategic program, Veolia combines its energy, water, and waste businesses to provide solutions to make buildings more resourceefficient in their construction and operation, or even producers of more energy than they consume.

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ARE READY TO CHANGE THEIR HABITS AND LIFESTYLES



are convinced that the solution lies in **an alliance** of technology and sustainability

ARE IN FAVOR OF RECYCLING AND REUSE TO PRESERVE RESOURCES



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



are ready to drink potable water from recycled wastewater



are ready to pay a little more for everyday products that contain plastic or packaged with plastic to ensure that they are recycled and reduce plastic pollution and limit oil extraction



In Barcelona, Spain, recovering cold energy in the port of Barcelona to produce local carbon-free energy

It's a world first! In the port of Barcelona, Veolia has deployed a solution that allows the recovery of residual cold from **Enagas' LNG** terminal and transforms it into local, affordable, and decarbonized energy. The creation of this innovative circular economy loop contributes to the preservation of resources and the sustainable goals of the territory.

A PIONEERING PROJECT

Utilizing wasted cold energy for the ecological transformation of an area is the principle behind the Ecoenergies project. Led by Veolia in cooperation with Enagas and with the support of the Barcelona city council, this public-private collaboration has led to the creation of an innovative circular economy loop. The solution, unparalleled worldwide, designed and implemented by Veolia, is based on the recovery of residual cold from the Enagas LNG terminal in the port of Barcelona. The traditional regasification process circulates liquefied natural gas (LNG) in a seawater loop below -160°C, delivering it to the network as gas at a temperature of about -2°C - 0°C. The cold generated during this process is usually discharged into the sea and thus wasted. Veolia's innovation lies in injecting the energy from this residual cold back into the urban network to provide heating, air conditioning, and hot water in an environmentally friendly manner.

42,000 TONS OF CO, AVOIDED PER YEAR

The 131 GWh of energy thus produced are indeed used to supply the Barcelona port area with local decarbonized energy. By providing energy at an affordable cost, the project thus contributes to the competitiveness of several industrial and tertiary sites, public infrastructures, and a significant food market for the region. By avoiding emissions related to energy production that would have been necessary in the absence of recovered energy, it also contributes to the decarbonization of the territory and to the preservation of strained resources. Thanks to this innovative solution, in fact, more than 42,000 tons of CO₂ will not be released into the atmosphere each year.

A DUPLICABLE AND REPLICABLE SOLUTION

This solution could be duplicated on more than 150 regasification terminals worldwide. It thus offers considerable technological potential, especially for sites where urban and industrial densities are suitable for its deployment.



"In the fight against global warming, we must do everything in our power to avoid unnecessary energy loss and waste. The recovery of waste heat and cold is thus a major component of Veolia's strategy for the ecological transformation of its energy mix. The replicability of the project initiated in Barcelona, which transforms lost cold into local, available and environmentally-friendly energy, opens up huge potential. Original and virtuous, it demonstrates the positive impact of territorial energy solutions on the decarbonization and competitiveness of territories," comments Estelle Brachlianoff, CEO of Veolia.





In Santiago, Chile, developing waste recycling for a "Zero Waste to Landfill" airport by 2050

Santiago's International Airport in Chile, in collaboration with Veolia, has implemented a sustainable waste management program with the ambition to reach the "zero waste to landfill" target by 2050. The goal is to transform waste into new resources!

RAPID PROGRESS

Spanning over 400,000 m², Santiago's international airport in Chile is the country's main air terminal. The Chilean state has granted its concession to the company Nuevo Pudahuel, whose main shareholders are the ADP group and VINCI Airports, two of the main airport operators in the world.

Nuevo Pudahuel has enlisted Veolia to establish a sustainable waste management program, with the aim of making the infrastructure a "Zero Waste to Landfill" airport by 2050. A stepby-step program, involving an audit, setting objectives, and a clear action plan, has been designed by the two partners to ensure effective progress and to involve as many of the various wastegenerating stakeholders as possible.

Result: The material recovery rate increased from 4% at the beginning of 2022 to 8% by the end of that same year, which represents a 200% increase compared to 2021. These improvements prevented 300 tons of waste from going to the landfill. In 2023, the recycling rate increased to 11.89% thanks to the implementation of a selective collection plan at the airport facilities, as well as the acquisition of a biodigester to enhance organic waste recycling, thereby preventing nearly 552 tons from going to the landfill.

WASTE TRANSFORMED INTO NEW RESOURCES

These initiatives help to conserve natural resources. Indeed, the airport's waste is sorted and upgraded according to its type and characteristics. Organic waste is turned into compost, cardboard into cardboard pallets, paper into napkins and toilet paper, plastic film into bags or packaging, PET into transparent packaging for products such as sushi or vegetables, HDPE into injection molded parts, glass into new bottles. Waste is thus transformed into new resources, creating circular economy loops. Furthermore, the management of organic waste, by reducing methane emissions, contributes to reducing the carbon footprint of the terminal as part of the Airport Carbon Accreditation program.

REWARDS

In 2023, the benefits brought by this program to the environment, society, and the city were recognized: the waste management service implemented by Veolia and Santiago Airport, operated (managed) by Nuevo Pudahuel won the first prize in the Sustainability Trophies of the Franco-Chilean Chamber of Commerce, in the category of global sustainability.





less waste in landfill in 2023







In Rennes, France, developing the reuse of building materials

In Rennes, Veolia and its partners give a second life to construction site waste.

DEVELOPING A CIRCULAR ECONOMY

In France, the building sector generates about 46 million tons of waste each year, yet, according to the Agency for Ecological Transition (Ademe), less than 1% of this waste is reused. Their treatment therefore constitutes a major environmental challenge, coupled with a regulatory constraint. Indeed, the implementation in France of extended producer responsibility for products and materials from the building sector (REP PMCB) requires multiplying recycling and recovery solutions. Starting from the principle that the best waste is the one not produced, Veolia has started on its sorting and treatment site for professional waste, including that from the construction sector, in Rennes. This approach aims to develop the reuse of construction materials through a circular economy loop.

A WIN-WIN PARTNERSHIP

Veolia signed a partnership at the beginning of 2023 with Articonnex, a specialist in combating waste of building materials, which has allowed for a second life for about 16 tons of materials received on its Rennes site. At the Barre-Thomas site. Veolia identifies, collects, and packages. Expertise that allows Articonnex to receive different types of deposits and diversify the origin and typologies of materials put back on sale in their warehouse-stores. For its part, Articonnex distributes, and thus offers a new offer to its construction customers with this solution for reusing their materials. In addition to these activities, Veolia carried out several occasional operations with Articonnex by offering them batches of reusable materials from various industrial customers, among other things, production offcuts from joinery, collapsible metal boxes or even PVC pipes. Beyond their ecological virtues, reuse solutions cover a tangible economic benefit for the companies these objects and materials that could be billed as waste are taken back for free. By intervening upstream of all treatment, Veolia thus offers a comprehensive waste management solution.

CONTINUE DEVELOPMENT IN OTHER TERRITORIES

A successful partnership that continues and paves the way for others. Relying on territorial anchoring, this launch has allowed these reuse and recycling solutions to open to new offers for professionals. Through these actions, Veolia, a committed actor in ecological transformation, participates in the reduction of building waste.





46 million tons of waste, in the building sector in France in 2023

> Challenge develop new reuse and

valorization channels

In Abu Dhabi, United Arab Emirates, sorting and recycling hotel waste to create new resources

The luxury **Shangri-la Qaryat Al Beri hotel in Abu Dhabi**, United Arab Emirates, like all establishments in the sector, has to manage a volume of waste that varies according to the number of visitors. In response to this issue, Veolia has implemented a personalized management plan with the goal of achieving a recovery rate of at least 75%.

COMPREHENSIVE WASTE MANAGEMENT SERVICES

Waste production in the hotel industry is proportional to the flow of customers and can therefore vary significantly from one period of the year to another depending on occupancy rates. The 5-star Shangri-la Qaryat Al Beri hotel in Abu Dhabi, one of the most luxurious in the United Arab Emirates, is no exception. Since 2008, Veolia has been entrusted to manage the housekeeping services and all the waste generated from the operation of 215 guestrooms, 6 private villas, 160 serviced apartments, 9 conference rooms, and 7 international restaurants.

VALORIZATION RATE ABOVE 75%

In this context, Veolia has implemented a customized waste management plan that meets the specific needs of the hotel and established high-quality services based on responsiveness, proximity, and commitment. The goal is to reduce the amount of waste produced and to achieve, and even exceed, a recovery rate of 75%. This means that this waste will be transformed into new resources. To achieve this, Veolia has implemented a waste collection plan by type, a waste bin and container management system that meets the high-end requirements of a luxury hotel, as well as a reporting tool. At the same time, the hotel staff and customers have been educated about waste sorting. This crucial support from Veolia ensures the provision of properly sorted materials that do not undergo downgrading and hence, the recycling rate can exceed 70%.

MULTIPLE BENEFITS

This action plan, coupled with the quality of the services provided, translates into multiple benefits.

- It enables the Shangri-La Qaryat Al Beri hotel to strictly adhere to hygiene standards and waste management regulations in the United Arab Emirates.
- It contributes to the positive image of the hotel among its clients and various stakeholders.
- It also supports the goals of the Abu Dhabi Environment Agency (EAD) in terms of waste reduction and reuse, protection of the environment and human health, and sustainable development.







> 75%





2.3 DEPOLLUTION Toward healthier indoor environments

The environmental and sanitary hygiene of buildings is today a major public health issue and quality of life on a global scale.

Living in healthier buildings allows us to:

- Limit the impact of building construction and operation on human health and the environment;
- Improve the quality and comfort of our living, working, leisure, care, etc;
- Act on respiratory problems that can lead to work stoppages;
- Control increases in rental charges and insurance costs;
- Extend the life of structures.

Environmental and societal commitments are thus respected, while reducing energy and water consumption.

Veolia therefore uses its expertise and technologies for:

- The decontamination of groundwater and contaminated soils to build buildings in a healthy and preserved environment;
- The management of construction waste to valorize them, as much as possible, into new resources to build other buildings or to eliminate them safely;
- Improving indoor air quality to promote comfort, well-being, and health of occupants, and managing outdoor pollution (odorous and environmental nuisances);
- Control of the water quality in sanitary networks (legionella, lead, etc.);

- The fight against pests (rats, crawling / flying insects, bacterial agents or even viruses like for Covid 19...);
- The treatment of hazardous waste including infectious waste to limit their overall impact on the environment and human health;
- The rehabilitation of sanitation networks (in the face of the obsolescence of the columns).

Veolia has a proven ability to deploy these expertise with means adapted to the analysis carried out and in an emergency situation if needed.

Healthier buildings to live in promotes health safety, comfort and well-being of users;

Healthier buildings to live in delivers better environmental performance;

Healthier buildings to live in maintains its heritage value.

Veolia offers pollution control solutions across all its activities, with the goal of treating 10 million tons of hazardous waste and pollutants by 2027, as part of its GreenUp strategic program. These solutions are all levers of action to make your real estate park healthier to live in.



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



ARE IN FAVOR OF SOLUTIONS COMBINING SUFFICIENCY AND TECHNOLOGY





are convinced that it improves their **quality of life**

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 T7% of global GDP.



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 "Consip 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 m² air-conditioned

12 air handling units

In the United States, ensuring health and safety by managing waste streams for a major children's hospital

A prestigious children's hospital in the United States, has entrusted Veolia with the task of effectively managing its waste to reduce its environmental impact, while ensuring safety and operational sustainability. Because the management of waste is crucial for health and environmental safety, the collaboration between the hospital and Veolia aims to avoid waste disposal in landfills, to promote recycling, to treat hazardous and non-hazardous wastes, and to reduce the carbon footprint of hospital operations. For over 20 years, Veolia North America has supported this hospital mission by providing reliable and environmentally friendly waste management services, meeting the requirements of the hospital and its various satellite sites.

WASTE COLLECTION, MANAGEMENT & TREATMENT

To achieve this goal, a team of three Veolia members is dedicated to waste collection at the hospital three days a week. They manage many complex waste streams, primarily composed of materials from research laboratories, including hazardous solvents. The Veolia team packages these materials following strict protocols and regulatory guidelines, safely transporting them to other Veolia sites for treatment, recycling or disposal... In partnership with the hospital, Veolia adopts an approach focused on sustainable solutions at every stage of the waste management process. Rather than storing materials in landfills, Veolia uses thermal treatments in incineration facilities, and offers solutions for recycling and fuel blending liquid solvents that can be reused to replace fossil fuels in cement kilns.

HEALTH AND QUALITY OF LIFE

The implementation of these solutions results in environmental, societal, and financial benefits:

- Reduction of waste disposal in landfills.
- Promotion of recycling and reuse of materials.
- Treatment of hazardous waste to ensure safe handling
- Maintenance of patient and staff safety and health through proper management of hazardous waste.







In Zarautz, Spain, **giving a second life** to polluted soils

As part of the development of the **coastal town of Zarautz** in the Basque Country, Veolia has intervened to decontaminate the soil and groundwater of a site that had previously hosted industrial activities. The aim was to accommodate new residential buildings while complying with the environmental administration's requirements.

DEVELOPMENT OF A NEW DISTRICT IN A TOURIST TOWN

The tourist town of Zarautz (Guipúzcoa), located by the sea in the Basque Country, is experiencing urban development that is expanding into new areas on former industrial sites. As part of this urban growth, Veolia has been called upon to carry out soil and groundwater remediation on a 21,500 m² site, in order to make them suitable for new residential use. The industrial activities previously conducted on the site necessitated decontamination work before continuing with urbanization and the construction of new buildings.

ADDRESSING ENVIRONMENTAL LIABILITIES

The main challenges of the intervention were not only in the research and implementation of solutions to address the environmental liability (cis-DCE and VOCs in groundwater), but also in adapting them to the construction works to meet the client's needs and the requirements of the competent environmental authority. Working closely together, the teams from SARPI Remediation Spain and SARPI Remediation France (filiale de Veolia), experts in decontamination of contaminated sites, soil and groundwater, Veolia have successfully completed the project in two phases:

- In-situ chemical oxidation (ISCO) involved two injection campaigns at 88 points with depths ranging from 10 to 12 meters.
- Pumping and treatment were conducted using a treatment plant with a capacity of 20 m³/h, and the treated water was re-injected into the aquifer to maintain a stable groundwater level during excavation and construction works.



The on-site technologies used by Veolia enable the decontamination of contaminated soils and groundwater while preserving the environmental balance of the area.



In France, improving the environmental performance of buildings and make them healthier to live in

60% of multi-unit residential buildings in France are over 40 years old. These aging buildings are more prone to complications, less resource-efficient, and offer a lower level of amenities compared to more recent constructions. This is why Veolia has developed a service offering dedicated to the environmental and sanitary hygiene of buildings. This results in improved comfort and quality of life for occupants, greater peace of mind and better financial performance for managers, while saving resources and reducing CO, emissions.

ENSURE THE COMPLIANCE AND QUALITY OF WATER AND AIR

According to statistics, in 2023, a new water leak occurs every two minutes in France. Aging buildings, insufficient maintenance of networks and sanitation facilities are the root causes of these incidents. These issues penalize both the occupants and the managers of these properties, while wasting water resources, which are becoming increasingly scarce and precious. To address these problems, Veolia can implement innovative technologies (sensors, probes, etc.) to detect, identify, monitor, and intervene on water and air networks with the aim of:

- Inspect and accept cold water and domestic hot water installations, in new construction or renovation, compliant with technical and sanitary quality requirements;
- Prevent the risk of bacterial growth, such as Legionella;
- Optimize heating, domestic hot water, or ventilation systems to reduce energy bills while maintaining occupant comfort and health;
- Rehabilitate the building's wastewater drainage networks, based on the existing infrastructure and without destruction, to limit disturbances;
- Identify opportunities for water reduction, reuse, or recycling;
- Ensure better air renewal in buildings while preserving the energy performance of ventilation systems.

FIGHT AGAINST PESTS WHILE RESPECTING BIODIVERSITY

Maintaining the sanitation of buildings and the safety of installations and infrastructure requires combating the proliferation of pests (bed bugs, rats, coypus...). To achieve this, Veolia favors mechanical trapping methods that limit animal suffering and reduce the use of biocidal products, in line with its mission to preserve biodiversity.





PROVIDE THE BEST QUALITY OF LIFE FOR OCCUPANTS WHILE SUSTAINABLY CONTROLLING COSTS

Veolia's comprehensive building hygiene offering therefore results in benefits at several levels:

- More attractive buildings because they are healthier and more comfortable;
- Better financial performance thanks to water and energy savings, reduced damage incidents, lower maintenance costs...;
- Better-maintained assets for preserved value;
- Buildings that are more resource-efficient, aligning with their owners' CSR strategy and the decarbonization trajectory of cities.

In France + 300 + 250 +500legionella sanitary technical indoor air diagnostics per inspections per quality audits per year year year Average potential of water savings with SCREEN audits

AND MANY MORE...

...solutions deployed worldwide to support the Ecological Transformation





activities.veolia.com

Industrial utilities and biogas and integrated facilities recovery Clean-up and treatment management Waste of nuclear equipment collection and low level waste Smart Cooling system industries Soil management remediation

Industrial effluent treatment

Desalination

Decommissioning and dismantling

Hazardous waste treatment and recycling

Waste transfer center

Landfill

Industrial cleaning and maintenance

Industrial process water

Total Waste

Management

3. By 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 buildings

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 support your business, accelerate your ecological transformation, and prepare for the future.



More than **60 Hubgrade** monitoring centers in **20 countries**

> 10 millions intelligent sensors

360 GWh saved electricity (2023)

990 GWh saved thermal energy

SAVING AND REGENERATION OF RESOURCES

DECARBONIZATION



490,000 tons of recycled plastics (2022)



1 billion m³ of reused water (2022)

+152,000 tons of hospital waste treated in 22 countries (2023)

DEPOLLUTION



Solutions to control Indoor Air Quality

where we spend more than





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





An ecosystem based on





people dedicated full-time to research and innovation









patents filed in 2022

TRANSFORMING what matters

TOWARD SUSTAINABLE IMPACT FOR ALL

How to implement and evaluate the ecological transformation of a building? By taking into account all the actors, the resources available in its territory and by seeking to reconcile economic, social and environmental issues as an inseparable whole. This vision of "multifaceted performance" has been carried by Veolia since 2020 and placed at the heart of its strategy. It can be applied to the management of a building to be part of a territory where it is good to live and work.





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.

TURN THE TIDE! ⁽¹⁾









By your side on all five continents





With Veolia, the ecological transformation of your buildings is within reach. Let's combine your expertise with that of our teams for concrete and achievable solutions. Together, let's make your real estate portfolio low-carbon, sustainable, healthy, resilient and attractive.

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.



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Veolia 30, rue Madeleine Vionnet • 93300 Aubervilliers www.veolia.com