



Environmental Solutions by VINCI

Rethinking water management for resource preservation



Introduction

Water: a legacy skill facing a future challenge

The state of our freshwater resources is critical: three years ago **in 2023, global waterways recorded drought levels not seen in 33 years.** Demand is rising, yet the availability of the resource is flatlining, even decreasing. At this rate, by 2030, global water demand could exceed supply by 40%.¹

Furthermore, **climate change is disrupting the water cycle and altering the distribution of water** across the planet.

A paradigm shift is therefore essential. Water management must transition towards a more systemic, integrated, and sustainable approach, as defined by one of the United Nations Sustainable Development Goal.² This approach prioritises levers such as the restoration of natural habitats and the reuse of wastewater. It requires a fundamental rethinking of water cycles, particularly in urban areas, to better preserve, manage, share, and reuse the resource, while allowing it to re-infiltrate natural environments.

As a long-standing player in the water sector, VINCI is contributing to this effort. The Group has long been involved in activities linked to this resource. **Its expertise is a major asset,** helping to deliver concrete

solutions to the water crisis.

Beyond its own water preservation policy, VINCI is designing and deploying **operational solutions for its clients to reduce water consumption.** This includes reusing non-conventional water resources and **implementing hydraulic infrastructure that strengthens the resilience of local areas.**

Through its expertise, VINCI is contributing to this global challenge which governments, public authorities, businesses, and innovation stakeholders must address collectively: preserving and regenerating natural cycles and ensuring the distribution of water is efficient, equitable, and sustainable.

Isabelle Spiegel,
Vice-president, Environment
VINCI

¹ "Turning the Tide", Global Commission on the Economics of Water, 2023.

² "By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate."

Water: a strategic resource in crisis

Water is becoming increasingly scarce due to climate change and human activity. This growing crisis is creating tensions and significant economic risks. Given the threat to this essential resource, rethinking water management is imperative to ensure a sustainable balance.



Water covers 72% of the Earth's surface, representing a volume of approximately 1.4 billion km³, but only 2.8% of this volume consists of freshwater suitable for human consumption⁴.

Water: an unevenly distributed and diminishing resource

According to the Stockholm Resilience Centre's planetary boundaries framework – which defines the constants necessary for the planet's balance – **7 of the 9 boundaries have been exceeded, including the one for freshwater, a threshold crossed in 2023.**¹ Exceeding this boundary means that the large-scale water cycle is now disturbed (see diagram on the following page) and that significant portions of the Earth's surface are becoming either drier or wetter, leading to intense droughts or severe flooding. In 2023, and for the third consecutive year, over 50% of the world's river basins recorded flow rates that were mostly below normal.² This disruption affects the amount of water available for people, agriculture, and ecosystems, placing further strain on the planet's reserves.

While **3.6 billion people currently face water shortages for at least one month every year**, scientists estimate this figure will rise to over 5 billion by 2050.³

A multifactorial crisis

The global water situation is the result of several converging factors, all of which are placing significant pressure on the resource.

¹ "Ocean Acidification: Another Planetary Boundary Crossed", Helen S. Findlay, Richard A. Feely, Li-Qing Jiang, Greg Pelletier, Nina Bednaršek, 2025.

² State of Global Water Resources report, WMO, 2023.

³ "State of Global Water Resources report informs on rivers, land water storage and glaciers," WMO, 2022.

⁴ "Water Storage Is at the Heart of Climate Change Adaptation", World Bank Group, 2023.

- **Climatic factors.**

Climate change is altering the temporal and spatial distribution, the intensity, and the frequency of rainfall. This carries severe consequences: **flooding or droughts, a significant decrease in the availability of freshwater** in its various forms, and a greater difficulty for natural environments to regenerate.

- **Social and societal factors.**

Demand for freshwater is increasing (projected to rise by 55% globally by 2050¹), driven both by **population growth** and by the greater consumption of more water-intensive products, such as meat and dairy, resulting from rising living standards.

- **Environmental factors.**

The increase in chemical substances – such as hydrocarbons, fertilisers, pesticides, and PFAS (per- and polyfluoroalkyl substances, also known as “forever chemicals”) – **is degrading the state of water.** Today, a quarter of Europe’s groundwater is chemically polluted.²

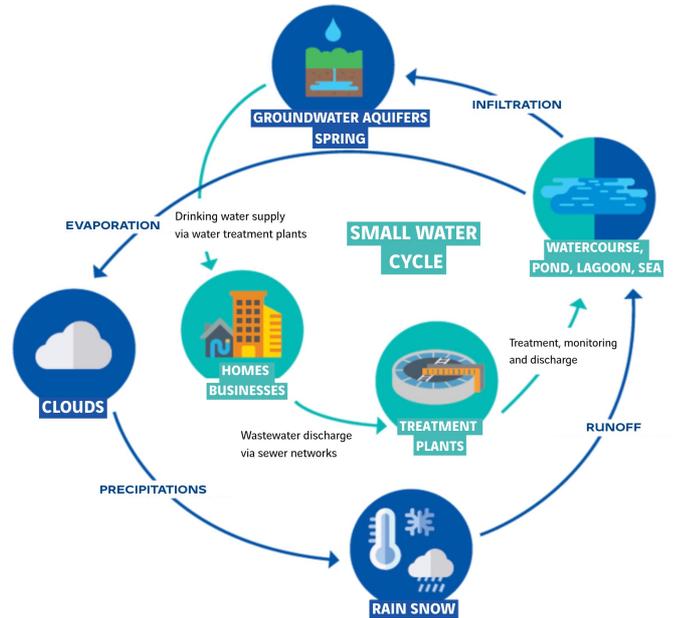
- **Structural factors.**

Water infrastructure is currently **outdated and inefficient.** In Europe, 23% of drinking water production is lost to leaks in the network.³

- **Economic factors.**

Water is central to economic activity: agriculture consumes 69%, and industry uses 19% (compared to 12% for domestic use).⁴ This trend is rising in certain rapidly developing sectors, such as data centres.

THE SMALL WATER CYCLE INTERCONNECTED WITH THE LARGE WATER CYCLE



The Large Cycle is the natural water cycle, from the source to evaporation and then precipitation.

The Small Cycle is the human-made cycle, running from the point of abstraction to the discharge back into the natural environment.



1.5million litres

This is the volume of water that a data centre can withdraw for cooling purposes, equivalent to the daily consumption of more than 13,000 households.⁵

¹ OECD Environmental Outlook to 2050, OECD, 2012.

² “Chemicals in European surface water and groundwater,” European Environment Agency, 2024.

³ “Poorly Managed Water”, European Commission.

⁴ UN World Water Development Report on “Valuing Water,” UNESCO, 2021.

⁵ “Making AI Less ‘Thirsty’: Uncovering and addressing the secret water footprint of AI models,” Communications of the ACM, 2023.

Water at the heart of tensions and usage conflicts

Scarcity and increasing human needs mean that water is a highly contested asset. **More than 250 river basins and aquifers are shared by multiple countries**, making the transboundary control of water highly strategic.

On a local level, conflicts over water use are proliferating between farmers, industry, local authorities, and citizens, as illustrated by disputes over “mega-basin” reservoirs in France.

Heavy economic consequences

The disruption to the water cycle also has very tangible consequences for the global economy. The European Central Bank estimates that in the Eurozone, **droughts could reduce GDP by 15% in certain sectors** (agri-food, construction, and mining).¹

More broadly, the water crisis **could reduce the median GDP of wealthy countries by 8% by 2050**, creating major ripple effects throughout the global economy. Low-income countries, facing the combined effects of climate change and dwindling water resources, could see an even sharper drop in their GDP, estimated between 10% and 15%.²

New regulatory frameworks for action

To address these challenges, public and regulatory policies are promoting **an integrated and more resilient approach to water resource management**. This shift was initially driven by the Sustainable Development Goals (SDGs), particularly SDG 6, which aims for universal access to drinking water and sanitation by 2030, under the guidance of the UN and the WHO.

Subsequently, at the European level, the Water Framework Directive (WFD) mandates an integrated approach to achieve ‘good ecological status’ for all waters. This is supplemented by specific directives, such as the Drinking Water Directive, revised in 2020, which strengthens water quality and health safety standards.

Finally, in France, the 2023-2027 Water Plan translates these objectives into action, focusing on efficient and coordinated water management, improving abstraction measurements, reducing pollution, and strengthening local governance, all while incorporating the new climate challenges.

¹ “Droughts are major threat to Eurozone economy, warns ECB”, *Financial Times*, 22/05/2025.

² “Turning the Tide: A Call to Collective Action”, Global Commission on the Economics of Water, 2023.



VINCI: Managing water-related challenges

VINCI is an established player in water management. Water is both a vital resource and a risk to some of its business activities. Consequently, the various divisions within the Group are tasked with finding and proposing solutions across the entire water value chain.

VINCI: Active across the water value chain

VINCI is a long-standing player in the water sector. It contributes significantly to **global river and maritime infrastructure** by building and maintaining assets such as **ports, locks, and navigable waterways** through companies like Océlian, Sethy, Terélian, and Carpi Tech.

In **hydroelectric power**, VINCI Energies and VINCI Construction Grands Projets construct and maintain hydroelectric dams. VINCI Construction has also developed specialist ecological engineering expertise under its Equo Vivo brand, focusing primarily on aquatic environments.

In addition, **VINCI's operations cover the entire water value chain.** These activities range from the abstraction and storage of the resource through to its consumption (industrial, agricultural, or domestic), encompassing the public treatment of drinking water (including desalination), its transport and distribution, followed by its collection, purification, and, finally, the recovery and reuse of wastewater. These activities are mainly handled by Sogea Environnement, WMI (Water Management International – a subsidiary of VINCI Construction), and Tedagua (a subsidiary of the Cobra IS Group).

Other activities specifically target **risk prevention** (pollution, quality, etc.), **vulnerability reduction** (site development, making soil permeable again, infrastructure resilience, etc.), **hazard management**, and the **restoration of degraded habitats** (such as wetlands).

Water: Both a risk and a resource

Furthermore, VINCI's businesses related to land development and artificialisation (i.e., paving/sealing soil), as well as infrastructure, are affected by climatic hazards, particularly the risks of flooding or drought. The challenge, therefore, is to create resilient infrastructure (motorways, airports, buildings, etc.) and ensure soil permeability.

Certain business areas also rely on an adequate supply of water in terms of both quantity and quality. For example, in construction, water is essential for worksites (drilling, asphalt, etc.), but supply is vulnerable to seasonal variability and the risk of pollution. In the operational phase, water is used for buildings and natural cooling systems. Suppliers are also dependent on water, notably for concrete production, which exposes the supply chain to risk.

The issue of water is therefore present in every VINCI activity and relates to both the small (human) and the large (natural) water cycles. Recognising these challenges, Leonard, the Group's innovation and foresight platform, launched a prospective study on water. The working group notably **mapped VINCI's water-related business activities in France to understand their impact on these cycles.**

This map serves as a key reference for improving processes and identifying solutions for both the Group and its clients, with the aim of better preserving the resource.

Water foresight within VINCI: the reflections and approaches undertaken with Leonard between 2024 and 2026

1 Role of land and infrastructure in water production

How can water recovery functionality be integrated into our clients' infrastructure to provide solutions for managing water stress on their sites?

The case of the photovoltaic canopy: The Ombre'O solution, combining productive shading with cooling shading.

Project leaders: VINCI Energies and VINCI Construction

2 Water efficiency in industry

How can industries be adapted to optimise water consumption and reduce their exposure to risks related to water stress, whether operational, reputational, regulatory or business-related?

Sponsor: Sogeti Environment (VINCI Construction), Acternium (VINCI Energies)

3 Decentralised, plot-level management, including reuse at neighbourhood scale

How can innovation in optimising water consumption and water reuse in the building sector be structured and accelerated? This approach is organised into three progressive phases:

Phase 1 – Maintenance and light refurbishment

Sponsor: VINCI Facilities

Phase 2 – Major adaptation works

Sponsor: VINCI Construction

Phase 3 – New-build construction

Sponsor: VINCI Immobilier

4 "Forever chemicals" (PFAS)

PFAS, these persistent and difficult-to-treat substances, contaminate soils and groundwater, representing a major environmental and public health challenge.

What innovative solutions and potential partnerships can be adopted to reduce their impact, in a context of increasingly stringent regulation?

Sponsor: VINCI Concessions

5 Desalination: an emerging field of exploration

What are the market dynamics, development opportunities and innovation pathways within this fast-growing sector? What internal expertise already exists, and which relevant models should be developed?

Provisional sponsors: Cobra IS, VINCI Energies, VINCI Construction

6 Water storage: what solutions for tomorrow?

What are the storage needs and which technologies should be prioritized: retention basins, built solutions, nature-based solutions or hybrid approaches? The aim of this discussion is to understand how to adapt and evolve our infrastructure in response to these challenges.

Sponsor: VINCI Construction

7 Watershed adaptation

How can we support businesses and local authorities in choosing resilience strategies: repair, adaptation, deconstruction and reconstruction? This working group is currently being formed.

Sponsor: VINCI Construction (to be confirmed)



Transforming our practices to preserve water resources

Facing the water crisis, VINCI aims to optimise its water consumption, particularly in water-stressed regions. The Group is trialling innovative solutions to reduce water abstraction and promote the use of non-conventional water sources, while also offering its clients services adapted to the climate challenges of their regions.

Reducing and measuring water abstraction

VINCI Construction, VINCI Energies and VINCI Concessions entities are implementing closed-loop water systems wherever possible to reuse the resource within the Group's operations and in services provided to clients. In addition, the different Business Lines of VINCI are increasingly using smart tools to report information concerning their water abstraction and installing sensors to identify leaks.

In this context, the Group has developed innovative solutions to limit its own environmental impact and that of its clients.

Using so-called non-conventional water

To reduce the unnecessary use of potable drinking water in infrastructures and limit its abstraction, the Group is increasingly using non-conventional water (such as wastewater, rainwater, etc.) in its processes.

Offering new climate change adaptation solutions

VINCI Construction, VINCI Energies, and COBRA IS entities are leveraging their historical expertise in the field of utility networks to innovate and provide clients with solutions that meet the needs of their regions.



SOLUTIONS FOR REDUCING WATER CONSUMPTION



CUTTING WATER USE REQUIRES ACTION ON MULTIPLE LEVELS, ACHIEVED THROUGH SIMPLE METHODS SUPPORTED BY SPECIFIC TECHNOLOGICAL INNOVATIONS.

Reusing water from air conditioning systems

Salvador Bahia Airport

VINCI Airports – Brazil

Challenge: Reduce water abstraction at airports.

Solution: This airport has set up a closed circuit: it collects the water used by the air conditioning system and stores it in tanks to supply the cooling towers.

Key figure: There are 23 such devices at this airport, each producing an average of 2 litres of condensation water per minute. In total, more than 17,000 m³ of condensation water are generated per year, representing 10% of the airport's consumption.

Detecting leaks as early as possible

Motorway network

VINCI Autoroutes – France

Challenge: VINCI Autoroutes is aiming for a 10% reduction in its water abstraction by 2030 (compared to 2018 levels).

Solution: To reach this target, **remote reading sensors have been installed across its networks.** These sensors allow teams to identify leaks as early as possible via email alerts and online visualisation. As soon as a leak is detected, an operative is dispatched to the location to either carry out a repair or begin the leak investigation.

Key figure: In 2024, VINCI Autoroutes' water abstraction had already **decreased by 15.5% compared to 2018.**



Installation of smart water meters across the VINCI Autoroutes network.

Filtering water instead of draining it

Uxel'eau

VINCI Energies – France

Challenge: Fire safety regulations mandate the regular draining of the 11,000 water reservoirs identified across France. This measure leads to significant consumption of potable water, a cost for refilling, and electricity consumption linked to the heating elements in anti-freeze systems.

Solution: Uxel'eau offers a **standalone, dynamic filtration system** which reduces water consumption by up to 95% and the electricity used by fire-fighting equipment by 11%. The product also keeps the reservoirs frost-free while using three times less electrical power than current systems.

Key figure: Currently being commercialised, this system is projected to **save 260,000 m³ of water annually by 2030**, representing a 91% reduction.



Using urine as a resource in agriculture

Motorway service areas

VINCI Autoroutes – France

Challenge: VINCI Autoroutes aims to reduce its annual water consumption (2.5 million cubic metres, equivalent to the yearly consumption of a city of 50,000 residents) by 10% by 2030, while also strengthening the circular economy and protecting ecosystems.

Solution: As nearly 80% of its water use is linked to sanitary facilities, VINCI Autoroutes decided to adapt the toilets and washrooms of its motorway service areas, installing waterless urinals.

To date, 209 waterless urinals have been installed across the network, and each use saves 3 litres of drinking water. Furthermore, COFIROUTE has partnered with the start-up Toopi to make use of the collected urine. This initiative has two key objectives: develop an ecological and circular agricultural model, offering farmers effective solutions to reduce their use of synthetic fertilisers, and enhance environmental performance by saving water.

Key figure: A 10% saving of water and 15% reduction in water taken from the natural environment in 2023. Following full deployment, an estimated 113,000 m³ of water will be saved by 2030.



SOLUTIONS FOR REUSING NON-CONVENTIONAL WATER



REUSING UNCONVENTIONAL WATER, SUCH AS TREATED WASTEWATER OR RAINWATER, HELPS TO CONSERVE DRINKING WATER RESOURCES, WHICH ARE TOO OFTEN TAKEN FOR GRANTED TODAY.

Reusing rainwater

Old Oak Common Station

VINCI Construction – United Kingdom

Challenge: Significantly reduce the use of freshwater in concrete production.

Solution: Developed in partnership with London Concrete, **this solution captures and treats rainwater in four steps:** rainwater collection; sedimentation via gravity; filtration to remove impurities; and quality testing to ensure compliance with safety standards for reuse. The treated water is then pumped to the concrete production plant, for use in concrete manufacturing as well as on-site vehicle cleaning and dust suppression.

Key figure: 40% of the 1,000 litres of water used to produce 8 m³ of concrete is recycled water, collected with the help of this solution.

Reusing wastewater

Gago Coutinho International Airport

VINCI Concessions – Portugal

Challenge: Due in part to climate change, Southern Portugal faces a persistent drought risk, with episodes becoming longer and more intense.

Solution: Gago Coutinho Airport plans to reuse wastewater to meet its non-potable water needs – for example, for vehicle washing and sanitary facilities. The proposed solution involves reprocessing and reusing water sourced from the municipal wastewater treatment plant.

Key figure: Starting in 2027, the reprocessing plant will be able to supply up to **230 m³ of water per day, accounting for 70% of the airport's total water consumption.**



The High Speed 2 (HS2) rail project mobilises VINCI Construction teams, working in a joint venture with Balfour Beatty, to deliver the main civil engineering packages of this high-speed line connecting London and Birmingham.

Mapping unconventional water sources

REUT by VINCI

VINCI Autoroutes – France

Challenge: Reduce the reliance of industry, farmers, and local authorities on potable water through the reuse of treated wastewater (REUT).

Solution: In 2023, Sogea Environnement deployed a solution to **irrigate La Grande-Motte golf course using treated wastewater** from a neighbouring sewage treatment plant (not operated by VINCI). REUT by VINCI, a collaboration between VINCI Autoroutes and Sogea Environnement, aims to develop similar projects. The project involves **cataloguing all unconventional water sources within the Group** and offering a reuse proposal to identified prospective clients.

Key figure: The system installed at La Grande-Motte golf course **substituted 50% of the water previously abstracted from the Bas-Rhône canal.**

Using seawater in non-structural materials

Puerto Bolivar

VINCI Construction – Ecuador

Challenge: Reduce the consumption of fresh water used in soil mixing operations – a technique that improves soil stability by binding it with other materials like cement – and in drilling.

Solution: On coastal construction sites, such as the Puerto Bolivar port extension project, this solution involves **replacing fresh water with seawater**. Specific binders and drilling fluids were specially formulated to guarantee the materials' compatibility with seawater and to maintain the mechanical properties of the resulting soil-cement mixture. This solution helps to **reduce freshwater consumption and the CO₂ emissions** caused by transporting water to the construction sites.

Key figure: The pilot project saved **25,400 m³ of fresh water in 2023**; by 2030, savings are projected to reach 275,000 m³.



REUT by VINCI: reuse of treated wastewater from the La Grande-Motte wastewater treatment plant to irrigate the golf course, reducing potable water use by 50%.

ADAPTATION SOLUTIONS FOR WATER STRESS CHALLENGES



DELIVERING NEW SOLUTIONS THAT ADDRESS THE CLIMATE CHANGE ADAPTATION NEEDS OF REGIONS, WHILE LEVERAGING THE GROUP'S HISTORICAL EXPERTISE IN THE FIELD OF NETWORKS.

Optimising the resource transfer system between two catchment areas

Sebou (North) and Bouregreg (South) Dams

VINCI Energies – Morocco

Challenge: In Morocco, episodes of drought and flooding are becoming more frequent. One solution to cope with this involves redistributing potable water between catchment areas. The Moroccan government has decided to do this by launching a project to link the Sebou (North) and Bouregreg (South) basins.

Solution: Actemium Eau Grands Projets proposed **an accelerated approach, which reduced both the project's construction time and its energy consumption.** The system was originally projected to require 0.8 kWh/m³ to operate, and its construction would have involved three pumping stations. Thanks to the techniques implemented, the system now requires only 0.5 kWh/m³ to run and uses just two pumping stations. Its construction also demanded less concrete than a conventional design.

Key figure: 15 m³ of water per second are transferred by the new system through a 70 km pipeline.



Transforming quarry dewatering water into potable water

Dompierre-sur-Helpes Quarry VINCI Construction – France

Challenge: Secure the water supply for local communities and limit the shortages that occur during summer droughts.

Solution: The solution implemented at the Dompierre-sur-Helpes Quarry (Hauts-de-France) proposes **exploiting the quarry's dewatering water**, which refers to infiltration or groundwater that is pumped to dry out the extraction pit. One-third of the pumped water will be sent to the local water distributor, who will treat it and then supply the potable water network.

The value added is twofold: it lessens the dependence on conventional water abstraction for supplying the neighbouring population, while also avoiding potential usage conflicts between the quarry and local authorities during droughts.

Key figure: The amount of water provided by the system is equivalent to the yearly potable water consumption of **5,350 households**.



Innovating to meet the challenges of integrated water management

With increasing pressure on the resource, **integrated water management** is emerging as a comprehensive and sustainable approach. It takes into account all **uses** (domestic, agricultural, industrial, natural), all **water sources** (rainwater, groundwater, rivers, the sea, etc.), and all **relevant stakeholders** (local authorities, businesses, citizens, associations). This approach aims to **prevent conflicts, reduce impacts, and preserve the resource over the long term.**

At VINCI, this vision is supported by **innovation**, with solutions that deliver a real impact. Beyond specific actions, the issue of water is also integrated into broader solutions aimed at better resilience to climate change. For example, the **Revalo®** offer from VINCI Construction, designed to create cooling islands to combat the phenomenon of urban overheating,

includes the management of rainwater and its re-infiltration at the plot level as one of its levers for action. In a different domain, **the Bi20 decision support tool** from VINCI Construction enables the environmental footprint of development projects to be assessed and favours options that optimise rainwater management.

All these solutions are founded on one motto: **to no longer treat water as a simple input, but rather as a crucial resource to be protected and shared.**

However, much remains to be done, collectively. This is why water will be the key focus of the next United Nations Water Conference, which will take place in September 2026 in the United Arab Emirates.



The series **Environmental Solutions** by VINCI deciphers the challenges of environmental transition and highlights VINCI's point of view and the solutions implemented within the Group to help improve living spaces, infrastructure and mobility.

These documents embody the Group's determination to put action at the heart of the rollout of its environmental ambition based on three priorities: acting for the climate, optimising resources through the circular economy and preserving natural environments.

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Cover photo: Water intake from the Great River treatment plant, Jamaica.



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