



Preserving  
water resources  
**Our commitments  
and actions**



**TotalEnergies**





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# Freshwater availability: a global challenge

Freshwater is renewable but it is a limited resource. Water shortages are intensifying as a consequence of demographics, urbanisation and droughts.

**LOTS OF WATER BUT LITTLE OF IT IS FRESH**

**75%** of Earth's surface is covered in water

But only **3%** is freshwater

of which **70%** is trapped in the glaciers

**IN 2050, THERE WILL BE 9.7 billion humans on the Earth**

**1 in 4 inhabitants** will be short of water

**FRESHWATER NEEDS BY SECTOR**

**Agriculture**  
**70%**

**Industry**  
**20%**

**Domestic use**  
**10%**

**THE ISSUE OF QUALITY**

**80%** of wastewater is discharged into waterways without any treatment.

**More than half the world's population** doesn't have access to potable water and sanitation.



**Patrick Pouyanné,**  
President and CEO

Water is an important issue for the planet, as well as for TotalEnergies as an industrial operator. Because we fully integrate this resources into our operations, we joined the *CEO Water Mandate* of the United Nations Global Compact in 2022. This framework helps us

act jointly with other players to protect this resource. Due to their nature, TotalEnergies' activities are susceptible to having impact on water resources as well as to be dependent on these resources particularly when these activities are implemented in sensitive

water environment. Conscious of these issues, we have set ourselves several objectives, including reducing our freshwater withdrawals in areas of water stress by 20% by 2030. (in 2021 these represented 54% of the Company's total freshwater withdrawals).



[ceowatermandate.org](http://ceowatermandate.org)

The *CEO Water Mandate* is an initiative created by the UN in 2007, with the aim of supporting companies and institutions in meeting global water challenges.

This mandate sets out six requirements to be integrated into operations in order to achieve the sixth sustainable development goal of the United Nations: "To guarantee access to

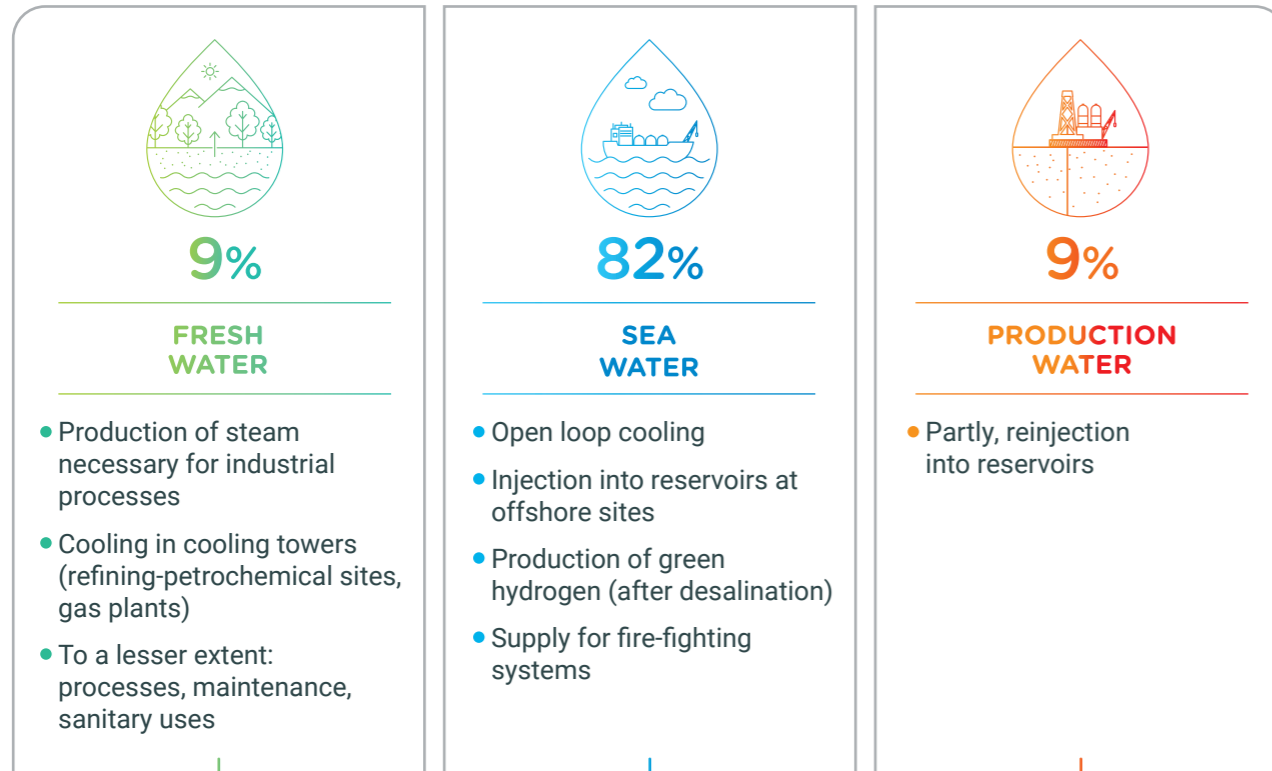
*water and sanitation for all and ensure sustainable management of water resources".*

The *CEO Water Mandate* also provides corporate supporters, governments, organisations and other stakeholders with a platform to share best practices, emerging solutions and forge multi-stakeholder partnerships.



## Status and objectives

1,396 MILLION M<sup>3</sup> OF WATER WERE WITHDRAWNS IN 2023, OF WHICH:



\*limit is 2.5 mg/l for European regulations

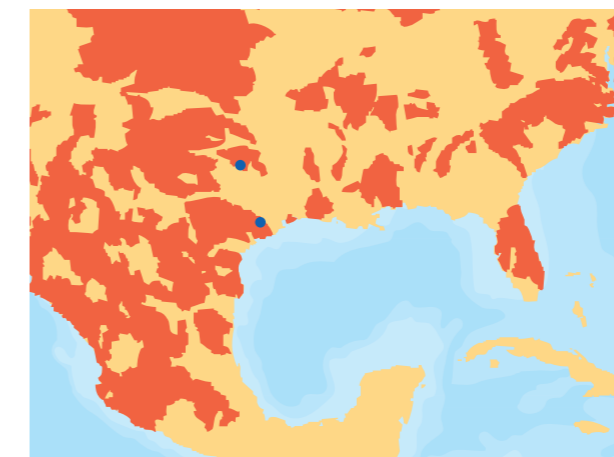
## Water stress, a point of particular attention

A region is said to be in a situation of water stress when the demand for water is greater than 40% of the available resource. These are often areas where water uses compete. This is the case for densely populated urban areas, such as Western Europe.

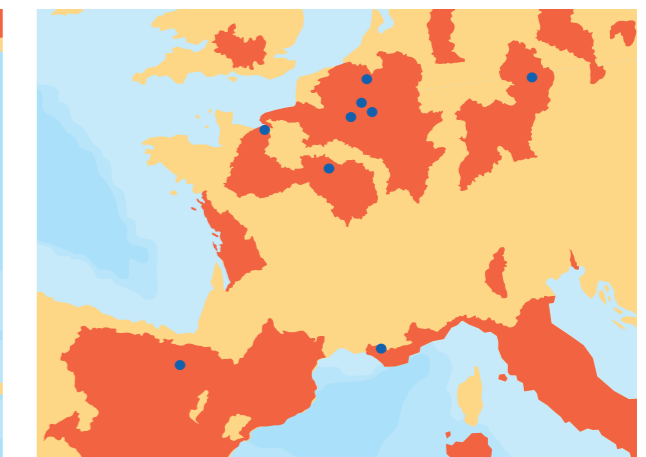
### CHALLENGES

In 2023, the **11 TotalEnergies sites** shown below together accounted for 49% of the Company's freshwater withdrawals.

UNITED STATES



EUROPE



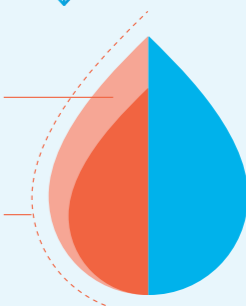
In red, geographic areas under water stress in 2030 according to Aqueduct 4.0 data from WRI\*.

### 2030 TARGET

We aim to reduce our freshwater withdrawals in areas of water stress by 20% compared to 2021. To achieve this target, avoidance actions are prioritised, followed by reduction actions, according to the mitigation hierarchy.

**-20%**  
by 2030

Our freshwater withdrawal in areas of water stress



\*the World Resource Institute (WRI) is an American organisation that produces knowledge on environmental issues.





## Our actions to reduce water withdrawals

We are conducting assessment at all our priority sites, located in water stress areas, to optimise water use.

### In Belgium

#### The Antwerp platform will reuse the city's wastewater

The largest of our refining petrochemical facilities in Europe sanctioned a large-scale project aimed at reducing its freshwater withdrawals. Named Waterkracht, it enables the treated wastewater from Antwerp households to be reused as a source of supply for the Port of Antwerp industries. Planned to be operational by 2027, it will enable our facility to

save approximately 9 million m<sup>3</sup> of potable water per year, i.e. 65% of its freshwater withdrawals.

This initiative, conducted in partnership with several local businesses, is part of the Blue Deal policy of the Flemish government, which aims to fight drought and water shortages.

**9 million m<sup>3</sup>/year**

that's the volume of potable water the Antwerp facility will save, which corresponds to the consumption of almost half the city's inhabitants.

### In France

#### The Bayet power plant transforms rainwater and steam into demineralised water

To produce electricity, the Bayet power plant (Auvergne-Rhône-Alpes region) needs demineralised water. It is fitted with several basins for collecting rainwater from roofs tops, gutters and car parks, as well as a basin which recovers water from purges and processes. Once filtered, this water is sent to a water tank which feeds the

production of demineralised water, thereby avoiding the need to add mains water, which the authorised volume is heavily regulated. Depending on rainfall, the Bayet power plant can save up to 70% of its drinking water consumption (i.e. 14,000 m<sup>3</sup>), as was the case in 2021.



Collection basin for rainwater from the Bayet natural gas combined cycle power plant

#### The Donges refinery is accelerating the reduction of its water consumption

The Donges refinery is one of the 50 industrial sites selected by the French Government to join the "Water Plan" program, whose objective is to help manufacturers reduce their water consumption.

For several years, the site has been engaged in a process of optimising its use of water, by improving the efficiency of the production of demineralised water, necessary to operate the boilers,

by reusing process water, monitoring water consumption on a daily basis. Today, the site is turning to the reuse of wastewater.

#### ALSO...

In the south of France, the La Mède site (Bouches-du-Rhône) is optimising its processes and deploying a variable flow pump with the aim of

**saving nearly 50% of annual water withdrawal compared to 2021.**





In Irak

## A seawater treatment plant to limit pressure on the Tigris and Euphrates

In 2023, the Iraqi government and TotalEnergies finalised an agreement for a multi-energy project. One of the components of this project provides for the construction of a seawater treatment plant.

In Iraq, to maintain pressure in the reservoirs of the oil fields in the Basra region, a large quantity of water is withdrawn by the various oil operators from the country's two main rivers (the Tigris and Euphrates), as well as from groundwater. The multi-energy project that the Iraqi authorities have entrusted to TotalEnergies includes the construction of a seawater treatment plant with a capacity of 290 million m<sup>3</sup> per year, in Khor Zubair. This project will help reduce the significant water pressure exerted on the two main rivers, supply water for the local population and agricultural use, while providing the volume of water



The Tigris in Iraq

necessary to maintain the pressure in the oil fields of operators in this region. On the Ratawi field where TotalEnergies is the operator, water from a deep saline aquifer will replace river water from 2025, until when water from the seawater treatment plant becomes available, when the commissioning of the plant planned for 2027, is completed.

**290**  
**millions**  
**m<sup>3</sup>/year**

is the processing capacity of the plant.



In the Middle-East

## Cleaning solar panels: a more water-efficient approach

To guarantee the proper functioning of our photovoltaic installations, we regularly clean our solar panels.

Regular cleaning of photovoltaic cells is essential to ensure the proper functioning of solar power plants. This operation is typically done with water. Thus, for an 800 MW power plant, approximately 300,000 m<sup>3</sup> of water per year is needed to clean the 1.5 million photovoltaic modules, the equivalent of the consumption of a town of 5,000 inhabitants. Reducing the water consumption of these cleaning operations is therefore a particularly

important issue in regions where this resource is scarce, as is the case in the Middle East.

That's why, in 2022, TotalEnergies, in partnership with the Qatar Environment & Energy Research Institute (QEERI), launched a study aimed at comparing six different models of robots to clean the solar panels, without using water. Cleaning is carried out by a nylon brush or microfibre cloth when the robot moves around the modules.

The pilots carried out in Qatar and Dubai showed the effectiveness of the process and provided valuable information on cleaning performance depending on the solutions chosen. Qualification of suppliers who have passed the tests is underway to enable us to offer a dry-cleaning solution for our new projects, particularly those located in water-stressed environments, by the end of 2024.



**Up to**  
**300,000**  
**m<sup>3</sup> of water**

saved per year for an 800 MW power plant.





# Developing ecological natural sanitation techniques



## A nature-based solution to purify water at service stations

To purify wastewater, the Limours-Janvry service station (Île-de-France), not connected to the municipal wastewater treatment network, uses the process known as **Reed-Planted Filters (RPF)**, a treatment system that uses phytodegradation. What is this process about ?

The effluents are routed to basins filled with mineral substrates (gravel, sand, rocks, clay, etc.) where reeds are planted. The substrates act like a sieve: they allow the water to pass through, filtering vertically through the successive layers of substrates while suspended matter are retained the surface.

This is then biodegraded by the microorganisms that develop in the reed beds. **Reed-Planted Filters** at the Limours-Janvry station treat up to 105 m<sup>3</sup> of water per day, the equivalent of the daily water consumption of a French village of roughly over 700 inhabitants.



Phyto-purification is based on the natural disposition of aquatic ecosystems to purify water. It uses the interactions between plants, substrate and microorganisms that develop on plant roots, to reduce, transform and eliminate pollutants.



## Wash centers recycle 75% of vehicle washing water

Our commitment to preserving water resources and the various constraints that weigh on the activity (restrictions on use in times of drought, regulatory obligations, cost of the resource, etc.) have led us to co-develop with our partners innovative arrangements for recycling water in our Wash centers.

Offering a more environmentally friendly car-wash solution is Wash's commitment. Some facilities at our centers are today equipped with systems which can recycle the water used to wash a vehicle and reduce the pollution contained in the wastewater.

The solution deployed is based on a 100% physico-chemical process in 3 stages (coagulation, flocculation and decantation) which agglomerates impure particles and substances to facilitate their separation from the water. Two types of equipment are available depending on the size of the wash center: an underground module intended for stations with high attendance, and a

compact, above-ground module sized to meet the needs of stations with lower attendance. The objective is to equip 600 wash stations with this system.



75% of the water used in Wash centers equipped is recycled water

**200 liters**  
↓  
**50 liters**

Thanks to the solutions deployed in our Wash centers, 50 liters of water are used per wash, compared to an average of 200 liters for a traditional facility.





## Social actions

Beyond the work on our sites, in the countries where we have a presence, we locally contribute to the United Nations Sustainable Development Goal No. 6, which aims to provide drinking water and sanitation facilities.

### In Uganda

In 2022, the KIRAMA project enabled the renovation of a well which supplies 3,000 beneficiaries in 10 villages in the community of Buliisa. This project also involved the supply of drinking troughs for animals, the strengthening of 10 water user management committees

and support for two associations of borehole maintenance mechanics. Other equipment has been installed: a pump, a tank, chlorine treatment and 20 private connections.



### In Nigeria

Since 2016, we have been building hydraulic infrastructure (wells, water treatment) powered by solar panels in rural communities, to alleviate water shortages and reduce the transmission of diseases linked to water contamination. We donated wells and treatment plants to 21 rural communities. In communities near our areas of operation, 14 wells, each equipped

with a storage tank with a capacity of 100,000 liters, are in service and benefit nearly 30,000 people. They are supplemented by several smaller wells, which serve communities of more than 2,000 inhabitants.



### In Mozambique



We support actions to ensure equitable access to drinking water and improve sanitation and hygiene services for local communities.

Since the start of the program, 75,000 people have benefited from the rehabilitation of more than 100 water

sources in the districts of Palma and Mocimboa da Praia, which are now managed by local communities.

### In Kenya

TotalEnergies is experimenting with the Kenyan company Glug, which specialises in the supply of drinking water, to rent space at a service station in Kenya so that it can install its brackish water treatment and purification system (mixture of freshwater and salt water) drilled from a well on site to produce drinking water, without using any minerals or chemicals. Thanks to this innovative

approach, Glug manages to reduce its production costs, offering consumers quality water at an affordable price. Customers are encouraged to adopt sustainable practices by filling their own bottles, helping reduce the use of plastic.







# Developing innovative tools with our R&D



## Better controlling our water footprint

The experts at our Lacq Study and Research Center in France (PERL) work daily to develop innovative, efficient and economical technologies to reduce the impact of our activities (mainly Oil & Gas) on water.

### BIOLUMINESCENCE AND ENVIRONMENTAL DNA: NEW GENERATIONS OF TESTS

The experts in ecotoxicology and hydrobiology at PERL are developing new methods to assess the ecological quality of waterways and the effects of aqueous effluents on their ecosystem. The new generations of tests and bioindicators on which they work use innovative biotechnologies: bioluminescence of organisms, biological changes in

microcrustaceans, transcription of the fish genome, and even environmental DNA<sup>4</sup>. These new field tools, which combine bioassays and biological indicators, are intended to be deployed on our sites to help us reduce our environmental footprint and carry out effective monitoring of our actions to preserve biodiversity.

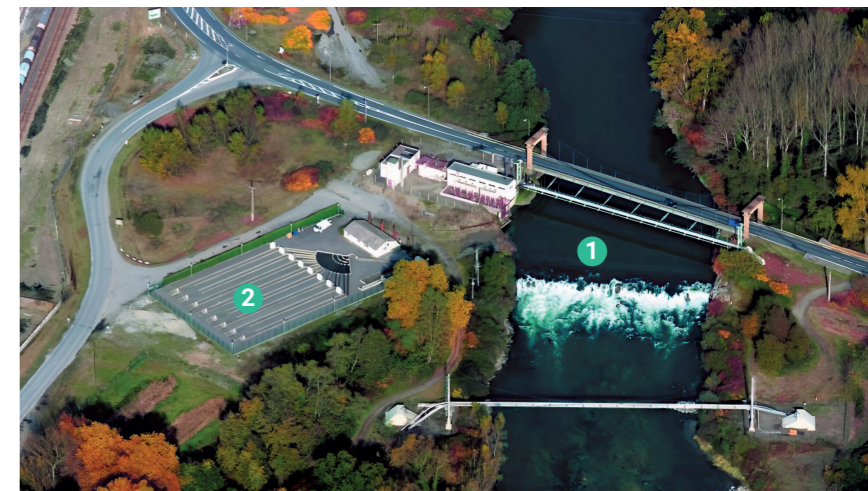


Laboratory bioassays highlight the ecotoxicological mode of action of chemical substances resulting from industrial activities, which are found in the environment. They assess their effects at different levels on living organisms, from the intracellular level, through tissues to whole organisms, and measure the resulting disruption to the entire ecosystem.

<sup>4</sup>/ Environmental DNA: a new approach for monitoring natural environments, making it possible to identify, from traces of DNA present in a water sample, the species present in aquatic environments (source: OFB – French Office for Biodiversity)

### PILOT RIVERS: OUTDOOR LABORATORIES FOR FULL-SCALE TESTS

A unique installation in France, the pilot rivers are 16 artificial waterways fed by the Gave de Pau (a river in southwestern France). They aim to reproduce aquatic ecosystems to carry out experiments on river biodiversity. These open-air laboratories allow PERL experts to study the potential impacts of industrial discharges on freshwater courses, assess them using biological indicators and evaluate the risks associated with specific substances.



The Gave de Pau ① and its 16 pilot rivers ②



### 3D TO VISUALISE GROUNDWATER AND MAKE THE RIGHT DECISIONS

The ORCAD (**O**nline and **R**ealtime **C**haracterisation of **A**quifer **D**ynamic) monitoring system, developed by PERL, provides data to better understand groundwater flows to minimise the environmental footprint of our industrial sites. We can thus access a better 3D representation of the circulation of underground water flows and

understand their speed. In the event of contamination or accidental pollution, we can predict the path and flow of propagation from its source to a potential receptor (supply well, water body, river, agricultural surface, coastal marine environment, etc.).

# Our partnerships

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## Actions in France

### Éco d'Eau

In December 2023, TotalEnergies announced its membership of the Eco d'Eau initiative, which aims to bring together all stakeholders - citizens, public authorities, businesses, associations, etc. - around actions to be carried out together to preserve our common water resource. As a partner in this initiative, TotalEnergies is contributing to deploying the communication of eco-actions in its motorway service stations and among its employees. In addition, several French industrial sites(\*) contribute to the Company's objective of reducing its freshwater withdrawals by 20% in areas of water stress between 2021 and 2030.

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## Actions with international scope



CEO  
WATER  
MANDATE



ipieca



In addition to the CEO Water Mandate, TotalEnergies is involved in study and research networks on the environment, and establishes technical partnerships and collaborations with recognised organisations such as WBCSD<sup>(1)</sup>, IPIECA<sup>(2)</sup>, the International Office for Water, as well as UPPA<sup>(3)</sup> on research and development issues.

# A-

In 2023, TotalEnergies responded to the CDP Water questionnaire for the 2022 period and obtained an A- score, which reflects leadership status on the subject. The main indicator for this report is freshwater withdrawal.

## PLEASE NOTE

The terms "TotalEnergies", "TotalEnergies company" and "Company" which appear in this document are used to designate TotalEnergies SE and the entities included within the consolidation perimeter. Likewise, the terms "we", "us", "our" may also be used to refer to these entities or their employees. The simple use of these expressions does not imply any involvement of TotalEnergies SE or any of its subsidiaries in the business or management of another company in the TotalEnergies company. This document may contain forward-looking information and statements. They may prove to be inaccurate in the future and are subject to risk factors. Additional information concerning the factors, risks and uncertainties likely to have an effect on the financial results or activities of the Company is also available in the most up-to-date versions of the Universal Registration Document filed by the Company with the Financial Markets Authority and Form 20-F filed by the Company with the United States Securities and Exchange Commission ("SEC").

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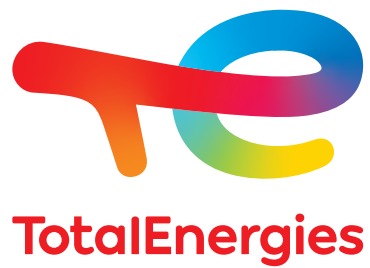
\*/ These are our Normandy, La Mède and Grandpuits platforms, and the Pont-sur-Sambre gas plant

1/ World Business Council for Sustainable Development

2/ International Petroleum Industry Environmental Conservation Association

3/ University of Pau and Pays de l'Adour. UPPA is a French higher education institution





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