

protecting the oceans

our solutions from earth to sea



the oceans: a vital resource

Just like water, air and forests,
the oceans are an essential
resource for human beings
and life.

the oceans
make a significant
contribution
to the economy

in terms of GDP, they are
the **seventh-largest**
economy in the world⁶

the oceans
add appeal
to our regions

60% of Humans live less than
150 kilometres from the coasts⁵

the oceans
feed people

fish is the **top worldwide
source of protein**
for three billion human beings¹

the oceans
regulate
the climate

they absorb carbon dioxide
and produce more than
50% of the oxygen
in the air we breathe²

the oceans
are a source of
sustainable energy

the total theoretical potential quantity
of marine energy worldwide lies between
20,000 and **90,000 TWh/year**³

the oceans
are home
to biodiversity

there are an estimated
one million
marine species, of
which two-thirds are
still unknown⁴

a common asset under threat

Today, the oceans' vital functions are threatened by human activities, which produce serious pollution, mainly plastics, resulting in global warming. And looking beyond the marine ecosystems, our health and our lifestyles are and will be impacted.

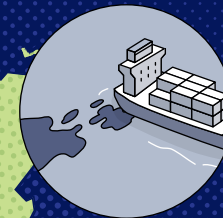
land pollution

80% of marine pollution comes from the land⁷

70% of industrial effluents are discharged into the natural environment without prior treatment in developing countries⁸



degassing of ships at sea



rising sea levels

sea levels are rising due to thermal expansion and melting glaciers



the "plastification" of the oceans

300 million tonnes of plastic waste float on the oceans: macrowaste, microplastics and, now, nanoplastics⁹

they are concentrated in the main **ocean gyres**, forming genuine "plastic continents"¹⁰



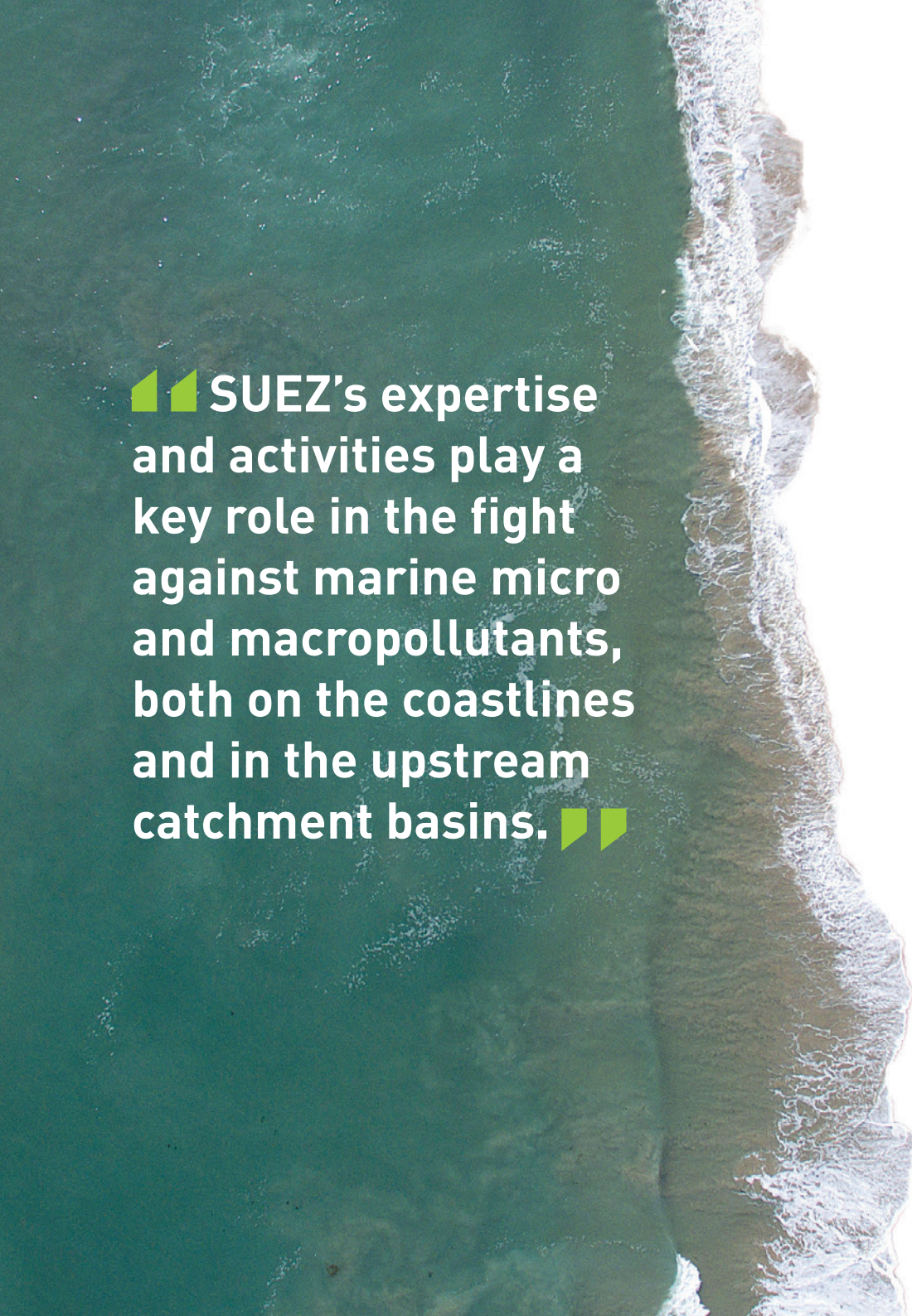
acidification and deoxygenation

the rise in carbon dioxide (CO₂) emissions by Humans is making the seas more acidic, depleting their biodiversity and reducing their positive external effects



Sources : 1. UN
2. Ocean & Climate Platform
3. International Energy Agency
4. UNESCO
5. Fondation pour la Nature et l'Homme

6. WWF
7. UNESCO
8. SUEZ
9. Expédition 7^e Continent
10. Ellen MacArthur Foundation



▶▶ SUEZ's expertise and activities play a key role in the fight against marine micro and macropollutants, both on the coastlines and in the upstream catchment basins. ▶▶

join SUEZ in its efforts

As a player in the sustainable management of resources, SUEZ is committed to protecting the oceans. SUEZ is working with **city authorities, industries, citizens and employees** to rise to this huge and essential challenge by providing its know-how and expertise in the management of the water and waste cycles.

By optimising the collection, recycling and recovery of waste, by improving the treatment and recovery of wastewater and rainwater on our regions, by regenerating biodiversity on seashores... we implement **concrete solutions that contribute to the conservation of ecosystems** and the ocean's resources in the long term.

On all five continents, on the coast and inland, we are all, public authorities and the private sector alike, responsible for the protection of the oceans.

to protect the oceans



permanent efforts in research and innovation

SUEZ invests in research and innovation in order to tackle, thanks to science, the challenge of marine pollution.

with the Provence-Alpes-Côte d'Azur region (France), SUEZ is defining new economic models to fight pollution from the coastal metropolis to the beaches. This open innovation approach (**Mare Nostrum**) is conducted in collaboration with local start-ups and consumer goods manufacturers

the **Plast'lab** laboratory is developing recycled, recyclable and non-polluting plastics

SUEZ Consulting has been developing a new science of the seas for several years, known as operational oceanography: **Actimar**

since February 2016, SUEZ has been piloting **MICROPLASTIC**, a 3-year public-private research partnership program that aims to detect, quantify and model the dispersion of micro-plastics, study the impact on ecosystems and test technologies to capture them as efficiently as possible in the stations

650 researchers and experts are involved at SUEZ

a long-standing expertise working for resources



SUEZ has been working for the sustainable management of resources, such as water and waste recovery, for 150 years. Our solutions help to capture pollution at its source.

SUEZ has developed **solutions specially designed** for cities and companies

SUEZ's **Sustainable Development Roadmap** for 2017-2021 includes targets for the protection of the oceans and the promotion of biodiversity



a collective responsibility, a collaborative effort

Every stakeholder, in politics, the economy, science, NGOs and civil society, must be mobilised to protect the oceans. SUEZ supports NGOs and international institutions in their efforts to mobilise citizens and employees.

SUEZ supports **whistle-blowers** and NGOs in their **scientific expeditions** on the seas all over the world

EXPEDITION
7th CONTINENT
FONDATION
GOODPLANET



since 2015, SUEZ has been a long-standing and pioneering partner of IOC-UNESCO for **World Oceans Day**, that is held every June 8th

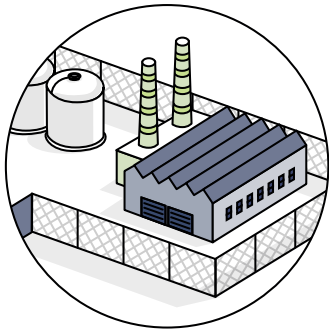
www.unworldoceansday.org



SUEZ launched the **#suez4ocean** initiative for World Oceans Day in 2017. Today, more than 90,000 employees can take action by organizing waste collections on the coasts and watersheds throughout the year. Citizens are joining them. www.suez4ocean.com

solutions from earth to sea

business
and industry

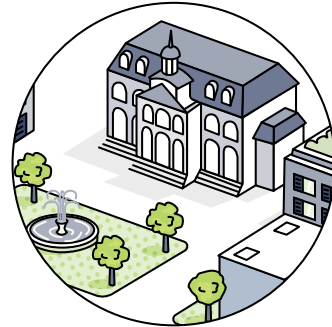


You care about meeting the environmental standards. You are planning to implement virtuous processes to improve your performance and stand out on your market.

#CLEANTECH #RECOVERY
#ECODESIGN #REUSE #CSR

... to encourage
every player
to commit

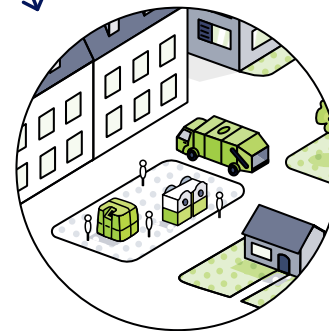
local
authorities



You promote well-being and quality of life in your community. You count on tourism and you want to strengthen an economic fabric based on sustainable development.

#CIRCULARECONOMY #SMARTCITY
#ATTRACTIVENESS #ECOTOURISM
#COASTLINE

citizens



You are aware of the consequences of global warming on water resources and aquatic ecosystems. You want to take action against all types of pollution.

#ECOCITIZEN #AWARENESS
#SORTING #RECYCLING
#ZEROWASTE



3
essential
objectives
for a better
protection of
the oceans

1.
to commit
to water
quality

2.
to aim for zero
waste in the
oceans

3.
to restore
and revitalise
the coastline



- I wastewater treatment
- II the fight against micropollutants
- III waste collection and clean cities
- IV beach clean-ups
- V treatment of hazardous waste
- VI recycling of plastic waste
- VII the fight against pollution in ports
- VIII soil remediation
- IX conservation of marine biodiversity
- X development of ports
- XI seawater desalination

...and many other solutions
described on the following pages
and on suez.com

commit to water quality

OBJECTIVE

**control discharges
of wastewater
and rainwater
into the natural
environment?**

**AQUADVANCED
URBAN DRAINAGE®**

software to optimise sanitation
systems and to anticipate
extreme climatic phenomena

VISIO

smart control centres for
water management

PRIMEGREEN

a filtration system that reduces
particulate pollution in rainy
weather



**monitor
marine
pollution?**

SIRENE

a system that raises
alerts of aquatic
pollution in real time

**combat
micropollutants
in water?**

MICROPLASTIC

detection and elimination
of microplastics
at treatment plants

ZONE LIBELLULE

elimination of residual
micropollutants on wetlands

**combat the
pollution at sea?**

treatment of ballast water
from ships

**encourage
the circular
management of
water resources?**

OXYBLUE

a solution to treat residual
waters so they can be
reused

references

in Bordeaux (France), we anticipate pollution thanks to weather forecasts

Waterproof surfacing reduces the natural infiltration of stormwater into the soil. Most of the stormwater flows on the surface, carrying fuel, heavy metals, plastics, etc. and increasing the risk of pollution of the natural ecosystem.

SUEZ came to the city's aid by developing **AQUADVANCED Urban Drainage**[®]. This digital system provides a global, real-time vision of the complete sanitation network based on short-term weather forecasts and on data collected from sensors, that are located on the network and the natural environment.

Risks of flooding and pollution are anticipated, storage in retention reservoirs is optimised, operating costs are reduced and the natural environment is protected.



**45%
less**
stormwater
enters the natural
environment



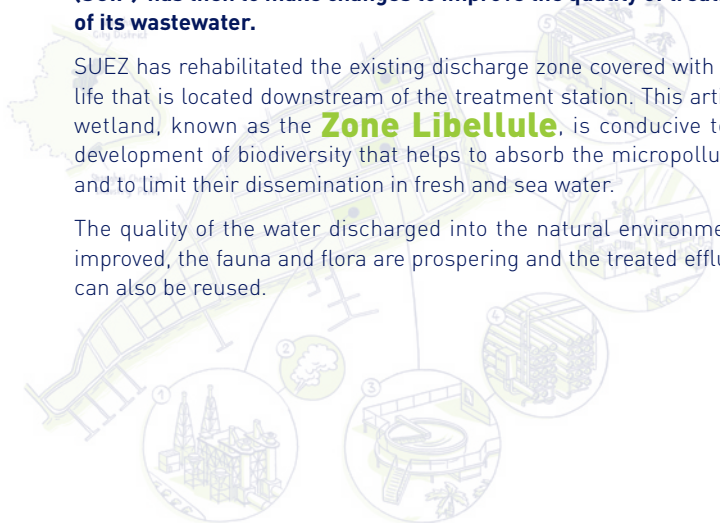
345,000 m³
of wastewater
treated everyday
(a volume equivalent
to the discharge from
a city of one million
inhabitants)

in Shanghai, we limit the impact of industries on the natural environment

Shanghai (China) has introduced more stringent regulations on the pollution of watercourses. The Shanghai Chemical Industry Park (SCIP) has then to make changes to improve the quality of treatment of its wastewater.

SUEZ has rehabilitated the existing discharge zone covered with plant life that is located downstream of the treatment station. This artificial wetland, known as the **Zone Libellule**, is conducive to the development of biodiversity that helps to absorb the micropollutants and to limit their dissemination in fresh and sea water.

The quality of the water discharged into the natural environment is improved, the fauna and flora are prospering and the treated effluents can also be reused.



02

OBJECTIVE

aim for zero waste in the oceans

are you
ready to ...

retain macrowaste?

a system that retains macrowaste drained by rainwater

depollution of industrial sites and management of hazardous waste to prevent the soil and water tables from being contaminated

step up for collecting and recycling plastics?

RECO

kiosks used as collection centers for plastic bottles, which reward the ecologically responsible behaviour of recyclers

recycling of PET packaging materials, which are particularly polluting, as a new material of the same quality

increase coastal clean-ups?

specific beach-cleaning services

move to the digital era in waste management?

VALOVISIO

smart control centre for waste management and recovery

references

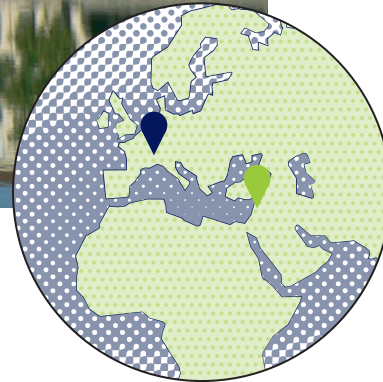


in Lyon (France), we capture the macrowaste that pollutes the rivers

The city authority decided to fight against the proliferation of the plastic macrowaste that ultimately represents a threat to watercourses and the oceans.

SUEZ deployed a device that uses hydrodynamic separators to intercept suspended solids and macrowaste that are carried by rainwater networks and then discharged through watercourses into the seas and oceans.

This self-sufficient system does not require an energy supply. It retains a wide variety of pollutants, helps to protect aquatic fauna and the environment and cuts the cost of cleaning up sensitive areas.



in Sidon, we removed the mountain of waste

In Sidon (Lebanon), the accumulated waste had formed a mountain, a part of which was spreading towards the sea. The environment and the health of the inhabitants were under threat.

SUEZ proposed to turn the landfill into a public park. A new waste storage, recovery and sorting site was also built, with its own test laboratory.

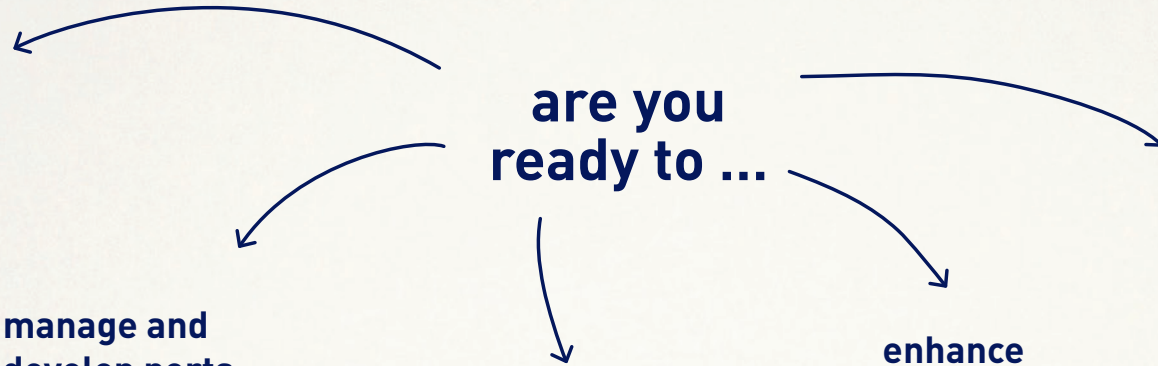
The waste is now categorised and treated in safety, and the quality of the air and water are guaranteed to protect the health of the local inhabitants.



03

OBJECTIVE

restore and revitalise the coastline



restore marine fauna and flora?

CYSTORE

restores certain algae in shallow coastal waters

BIONURSE

gives a helping hand to fish living in ports

manage and develop ports to enhance the appeal of your region?

MARINOV

maintains water quality and includes an emergency water depollution kit

assess conditions at sea to keep maritime activities safe?

CURDRIFT

is a solution that gives warning of drifting pollutants

ACTIMAR,

or operational oceanography, is used to plan operations at sea and in ports and to route ships

enhance the sea as a resource?

desalination with solar energy is an ecological method for cities facing shortages of drinking water

guarantee the water quality for bathers?

COWAMA

a solution for modelling ocean currents, the weather conditions and the sanitation networks to predict the pollution of bathing sites

GEN-SPOT

continually monitors and analyses bathing waters in 3 hours

I-BEACH

uses mobile apps to inform residents in real time

references

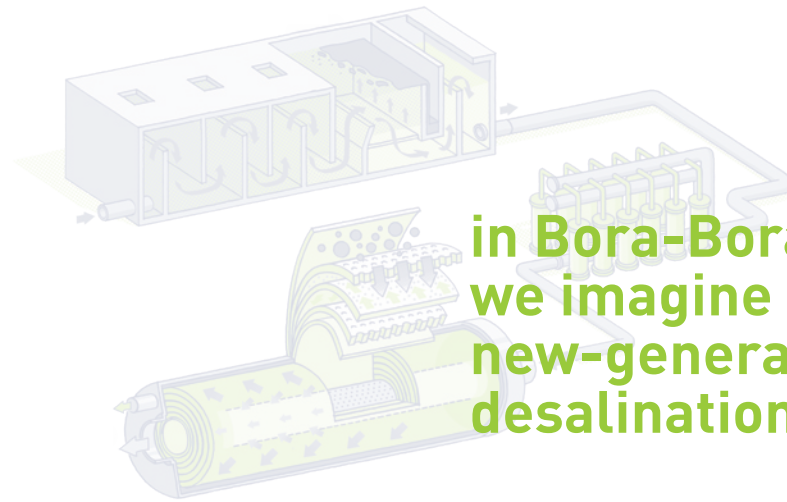


in Greater Paris, we know how to enhance the attractiveness of the ports

The goal was to revitalise the ports and enhance their appeal, while reducing the pollution caused by human activity

Marinov developed an offer to make ports more attractive, while protecting the environment, with the installation of grey water collection points in Asnières-sur-Seine, the visit of riverbanks by electric boats, the landscaping and maintenance of the port... Alongside the local authorities, SUEZ contributes to the economic dynamism of the region.

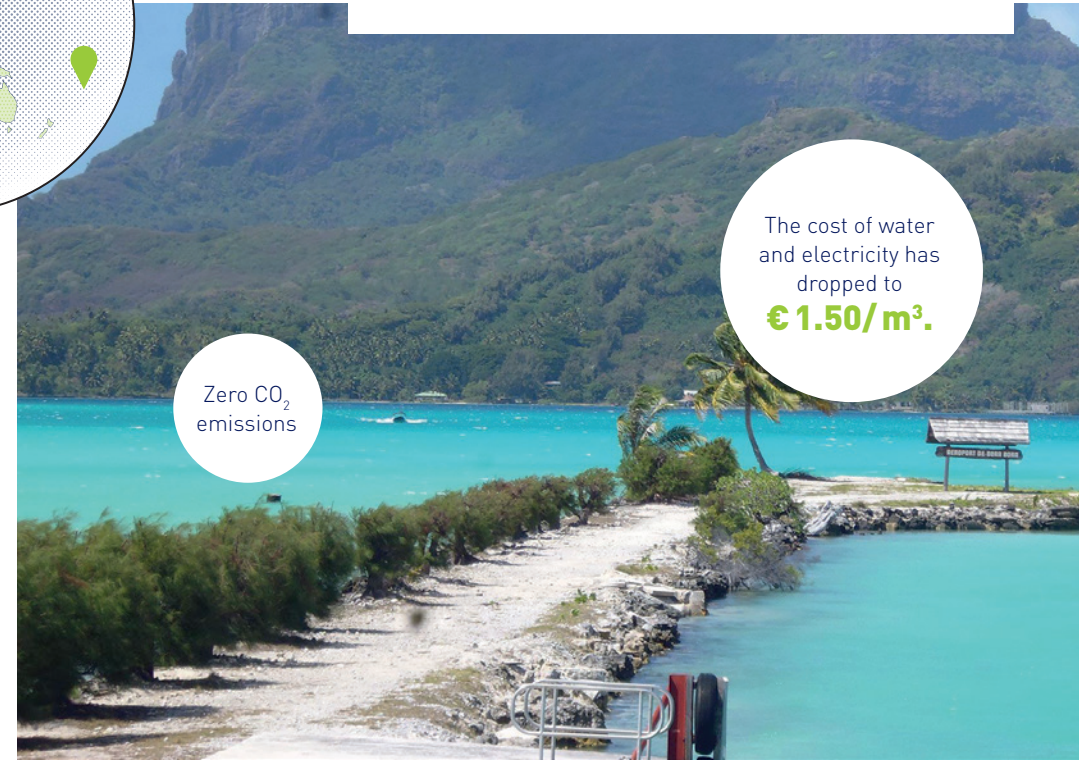
The quality of the users' experience has been improved significantly, the heritage sites and riverbanks have been enhanced and the biodiversity is now protected.



in Bora-Bora, we imagine the new-generation desalination

Resources have been depleted by the rising demand for drinking water and energy.

SUEZ supplies drinking water to zones impacted by water stress thanks to its **OSMOSUN** project, which consists in producing drinking water from seawater, using only solar energy.



Zero CO₂ emissions

The cost of water and electricity has dropped to **€ 1.50/m³**.

Marseille, the sentinel of the ocean

SUEZ is active on numerous fronts in Marseille to protect the sea and the coastline. With its strong local presence, the Group has developed technological and innovative solutions integrated in complete systems designed to restore the ecosystems and the quality of life along this outstanding coastline. An emblematic Mediterranean success story for the city authorities.

Pennes Mirabeau

the Pennes Mirabeau sorting centre has set a new standard in the field, handling 94,000 tonnes of recyclable household waste per year.

the PHQRE

monitoring and control centre for wastewater and stormwater networks throughout the catchment area, which integrates interconnected and interoperable technologies.

Urban cleanliness

a discreet and permanent new generation service guaranteeing a continuous cleanliness of the 1st and 2nd arrondissements for the benefit of residents, shopkeepers, restaurateurs and tourists.

Ganay

this retention basin located upstream of the Géolide station protects the host environments. It has already enabled 1 million m³ of water to be treated and has reduced discharges into the Calanques natural park by 50%.

HydroMer

this tool is designed to anticipate the flows and the water quality in the sanitation network and treatment plants.

A stylized map of Marseille, France, with a green and blue color scheme. The map shows the city's layout, including the harbor and surrounding urban areas. Six callout bubbles are connected to specific locations on the map by thin lines. The bubbles contain text about various projects: M@re Nostrum, Géolide, SIRENE, Marseille Infos Plages, Gen-Spot, and Bionurse.

M@re Nostrum

open innovation between public/private partners to imagine new economic models and fight against pollution of the bay by urban waste, in view of the 2024 Olympic Games.

Géolide

the biggest underground treatment station in the world treats 78 million m³ of domestic and industrial wastewater every year.

SIRENE

an alert system based on the measurement of aquatic pollution in six strategic stations: Vieux Port, Huveaune, Jarret and Cortiou in the Calanques.

Gen-Spot

a bathing water analysis method based on molecular biology. The results are produced in less than 3 hours, compared with 36 hours using conventional methods.

Marseille Infos Plages

residents can access information on the quality of the bathing water, the weather conditions, the force of the wind, etc.

Bionurse

an operation consisting of installing artificial nurseries in the Pointe Rouge marina to regenerate the habitat of certain fish. The result: three to eight times more juveniles.

Publication: SUEZ Communication Department

Design: bearideas

Photo credits: SUEZ / Getty Images / Unsplash / Pixabay

Illustrations: Thomas Viette, Geoffroy Wagon

www.suez.com / @suez