



Environmental Solutions by VINCI

Oceans: for a sustainable blue economy

Rethinking our relationship with the ocean

Covering more than 70% of its surface and capturing 30% of atmospheric CO₂, seas and oceans are our planet's main heat and carbon sink and **play a central role in the global climate balance**. They are also at the heart of **structuring sectors for the global economy**: fishing, maritime transport, marine energies, coastal tourism... Three billion human beings depend on the ocean economy.

Yet this dual wealth is now under serious threat from climate change, the accumulation of pollutants and the over-exploitation of resources.

These interconnected phenomena are undermining ocean ecosystems as well as the human societies that depend on them. It is therefore essential to rethink our relationship with the ocean.

A paradigm shift is needed: from an economy of the sea based on intensive exploitation to a **blue economy resolutely focused on preservation, responsible innovation and international cooperation**. In this respect, the United Nations Ocean Conference in June 2025 (UNOC-3) marked a turning point in the mobilisation of public and private stakeholders: with 64 Heads of State and Government present, it pushed forward the ratification of

the High Seas Treaty (BBNJ - Biodiversity Beyond National Jurisdiction) and implemented a new objective of protecting 30% of the ocean by 2030.

At VINCI, we are responding to these major challenges by offering **resilience solutions on several fronts**, from waste and pollution reduction to the construction and adaptation of port and coastal infrastructures. We are also incorporating seas and oceans into our forward-looking thinking, to explore ways of regenerating their ecosystems and the innovations created by a responsible blue economy.

By contributing targeted expertise and concrete solutions, VINCI is participating in the joint effort now being made by governments, public authorities, private companies and innovation players.

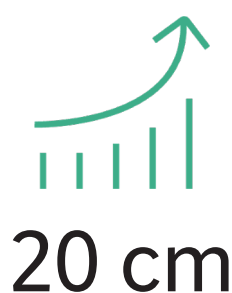
Together, let's take action for a resilient and regenerated ocean!

Isabelle Spiegel,
Director of Environment,
VINCI

The blue economy: from regeneration to innovation

As climate regulators, reservoirs of biodiversity and pillars of the global economy, the world's oceans have long been neglected in action plans to tackle the climate crisis.

Their degradation threatens the planet's ecological and economic balance. The aim of the blue economy is to fully integrate their environmental role and development potential.



rise in sea levels
in the 20th century⁴



of CO₂ is captured in
oceans by
phytoplankton

At the heart of the climate crisis: a regulator under threat

Oceans play a key role in regulating the climate. A true-blue forest, they have absorbed around 90%¹ of the excess heat generated by greenhouse gases since the 1970s, preventing an even greater rise in atmospheric temperatures. They capture around a third of the CO₂ emissions produced by human activities. Oceans are therefore an **indispensable ally in mitigating global climate change**.

However, the marine ecosystem is under pressure from many sources, undermining its equilibrium. Beyond the spectacular images of oil spills, **80% of chronic marine pollution² comes from human activities on land**, including industrial emissions, agricultural run-off, and waste dumped on coasts or in rivers.

Since the beginning of the industrial era, the additional carbon dioxide absorbed by the ocean has led to a **30% increase in their acidity**, seriously affecting coral and shellfish. As a result of global warming, the rise in average sea levels now directly threatens **more than 680 million people living in coastal areas³ and could reach one metre in a scenario limiting the global temperature increase to 2 degrees Celsius**.

¹ [Ocean heat content | CMEMS](#).

² European Commission (2022). *The EU Blue Economy Report*. 2022, Publications Office of the European Union, Luxembourg.

³ Special Report on the Ocean and Cryosphere in a Changing Planet, IPCC, 2019.

⁴ Sixth IPCC Report, Chapter 9, "Ocean, Cryosphere and Sea Level Change", 2021.

From conservation to regeneration: towards a blue economy

In 2021, the economic value generated by ocean-based activities was estimated at **2,500 billion dollars⁵**, which would represent **the 7th economy in the world**. Fishing, maritime transport, coastal tourism and marine energies are all pillars of a vital marine economy that is now under threat from drastically diminishing resources, accelerated erosion (coastal tourism) and climate risks. **More than 150 million jobs⁶ worldwide depend, directly or indirectly, on the ocean**, including over 500,000 jobs⁷ in France. The rapid transformations that seas and oceans are undergoing today are threatening many of these activities, and **practices must be adapted**.

Conservation efforts have so far been limited, and some damage — including that caused by global warming — is now irreversible.⁸

A sustainable blue economy must now focus on **the active regeneration of marine ecosystems**. The concept aims to combine environmental and economic approaches. The World Bank defines this blue economy as “the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, while preserving the health of the ocean ecosystem.”⁹ It is based on **adapting traditional marine activities to climate change and developing activities that are compatible with the long-term health of the oceans**: offshore renewable energies, low-carbon infrastructures, technological and biological innovations and nature-based solutions (artificial reefs). It is in line with **the UN’s Sustainable Development Goal 14 (SDG 14)**, which aims to “conserve and sustainably use the oceans, seas and marine resources for sustainable development”.



\$2,500 billion

The economic value generated by ocean-related activities



3 billion

people depend directly or indirectly on the ocean economy

⁵ Report of the United Nations Conference on Trade and Development (UNCTAD) -2021.

⁶ [The Ocean at the heart of an international summit in Nice - UN France](#)

⁷ [Maritime economy | Key figures for the sea and coastline - 2024 Edition](#)

⁸ [Ocean heat content | CMEMS](#)

⁹ [Blue economy: when finance takes to the sea... | Sciences Po Alumni](#)

¹⁰ [ODD 14, Vie aquatique.](#)

However, the transition to a **regenerative maritime economy** faces a number of challenges. Ocean governance, fragmented between public, private and international players, complicates the implementation of coherent actions. **This calls for greater cooperation and large-scale, coordinated investment.**

The innovations needed will have to adapt to the complexity of the marine environment, combining cutting-edge technologies and resilient low-tech solutions.

Finally, the exploitation of the deep seabed raises major questions: while it promises critical resources (including rare metals such as lithium), it also entails irreversible risks for biodiversity. This raises the urgent need for shared governance.



UNOC-3: ACCELERATING COLLECTIVE ACTION

In June 2025, the Third United Nations Ocean Conference was held in Nice, bringing together more than 30,000 participants from all walks of life: States, international organisations, civil society, the private sector, scientists and others. Its objective, **“Accelerating action and mobilising all actors to conserve and sustainably use the ocean”**, aimed to strengthen the SDG 14 and global governance.

Significant advances included

- **the entry into force of the BBNJ treaty** (*Biodiversity Beyond National Jurisdiction*) by January 2026, thanks to its ratification by nearly 67 countries by the end of 2025;
- the creation or reinforcement of **marine protected areas** by many countries, which could thus reach 10% of marine areas (compared with 3% at present);
- the convergence of 96 countries to adopt a treaty aimed at **reducing the production and consumption of plastics**;
- the intensification of the **fight against illegal fishing**;
- the reaffirmation by States of **the central role of the International Seabed Authority** responsible for managing the deep seabed zone in international waters and drawing up a mining code. In addition, 37 countries adopted a demanding position to **impose a precautionary pause on seabed mining**.

VINCI, a player in coastal resilience and the decarbonisation of the maritime sector

Because the creation of maritime infrastructure is at the heart of VINCI's historical activities, the Group is now helping marine activities adapt to climate change and to limit their impact on the oceans.

As a longstanding player in the construction of maritime infrastructures, the Group is contributing its expertise by designing **resilience solutions for the construction or renovation of coastal and port infrastructure**, which combine development, risk prevention and environmental responsibility. The aim is to promote adaptation to climate change in order to contain rising sea levels, combat their effects and enable coastal populations to live and carry out their activities. VINCI is also a player in the **decarbonisation of port and maritime activities and the optimising the use of renewable energy** to limit CO₂ emissions.

In addition to these solutions aimed specifically at activities linked to the oceans, VINCI is taking action to cut waste generation on land and at sea, helping to limit marine pollution. VINCI is taking action **to cut waste generation on land and at sea, helping to limit marine pollution**. Major programmes are currently underway, such as the objective of recovering 100% of waste from operations and areas managed by VINCI Autoroutes by 2025, and the "zero single-use plastic" initiative for all infrastructure operated by VINCI.

VINCI is also continuing research on **solutions to treat and purify water**, with solutions such as GRASS, from Sogea Environnement (VINCI Construction) or AiO-loop (VINCI Construction Grands Projets), which contribute to optimised wastewater treatment.

At the same time, VINCI is involved in programmes to restore ecosystems, such as the **project to restore sea grass beds in Faro, Portugal**: in partnership with scientific institutions and as part of the European LIFE programme, VINCI Airports is helping to rehabilitate this essential habitat, a pillar of biodiversity and a natural carbon sink.

Finally, Leonard, VINCI's innovation platform, has been **exploring the opportunities offered by a sustainable blue economy** since 2022.

In partnership with the Sustainable Ocean Alliance (SOA), an association with expertise in the maritime sector, a founding report (*Cap sur l'économie bleue durable*) and events are fuelling an ocean-focused innovation drive that is gradually being integrated into the Group's strategies.

SOLUTIONS FOR THE RESILIENCE OF COASTAL AND PORT INFRASTRUCTURE



THE NEED TO ADAPT TO CLIMATE CHANGE IS TRANSFORMING THE WAY INFRASTRUCTURE IS DESIGNED AND BUILT. VINCI OFFERS PORTS AND COASTAL AREAS DIAGNOSTIC TOOLS AND SOLUTIONS FOR ADAPTATION AND RESILIENT MODERNISATION.

Climate risk analysis

Concept: Analyse the risks associated with climate change (rising sea levels, accelerated erosion) to assist in decision-making when transforming infrastructure or regional planning.

VINCI's expertise: **Resallience** is an engineering consulting firm in the VINCI Group (Sixense), specialising in **adapting infrastructure to climate change**. In particular, Resallience participated in the CLARION research project, financed by the Horizon Europe programme, which aims to strengthen the resilience, sustainability and safety of European ports in the face of the effects of climate change.

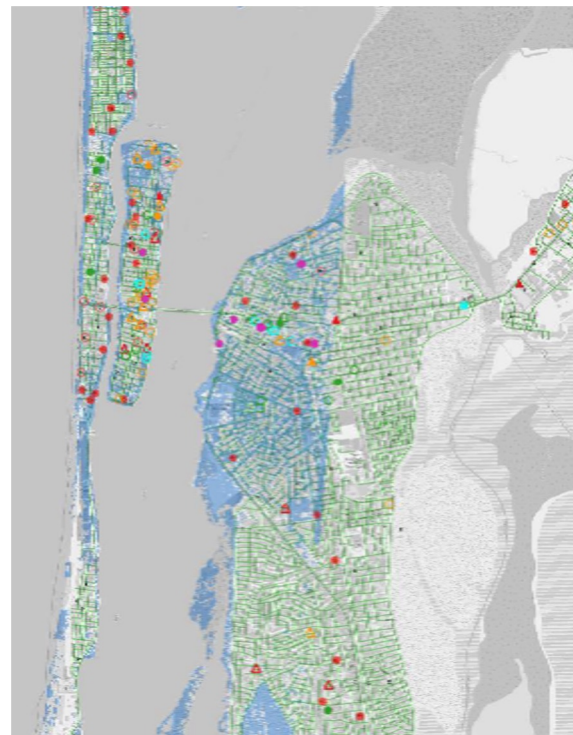
OSS Saint-Louis of the Space Observatory for Climate (SCO) – Resallience – Senegal

Challenge: Propose tools and indicators of the vulnerability of populations, economic activities and infrastructures in order to guide decision-making.

Solution: Supported by Resallience, the University of Rouen and the Amadou Mahtar Mbow University in Dakar, the aim of this project was to produce cartographic simulations of flooding under several scenarios of rising sea levels and current and future hot spot zones.

Deployed on the Saint-Louis coastline in Senegal, it used a multi-sensor approach to assess vulnerabilities linked to cumulative coastal risks, combining existing data *in situ*, population surveys, statistical processing, cartographic simulations and multi-sensor satellite data. An interface makes it possible to visualise the risks and vulnerabilities of the coastal town and to simulate flooding scenarios.

Key figure: 10 km of coastline analysed.



Exposure to storms and sea level rise in 2100 on the Saint-Louis coast (Senegal).

Modernisation of ports and maritime infrastructures

Concept:

- **Strengthen the resilience and sustainability** of port infrastructure or coastal zones in the face of disturbances caused by climate change to prevent human and material risks, as well as economic losses and service disruptions;
- **Propose solutions that help reduce the environmental footprint.**

VINCI's expertise: VINCI pilots the modernisation of port infrastructure or the ecological restoration of coastal areas **by integrating climate resilience strategies right from the design and construction stages** in particular **via Océlian, its maritime and river works subsidiary**. The environmental dimension is present in all phases of projects (design, construction, operation).

La Cotinière fishing port – Terélian et Océlian – France

Challenge: Modernise this port on the island of Oléron to **boost economic activity while reducing the impact on the environment** and taking climate risks into account.

Solution: Terélian and Océlian renovated the port's infrastructure, protected sensitive coastal areas and enhanced a picturesque area popular with tourists, notably by creating a 40,000 m² mooring area, a new 4.3 ha basin for up to 70 ships and the construction of two new 135 m and 80 m pontoons.

Key figure: Reuse of around 90% of the materials on site.



La Cotinière fishing port (France).

Réunion Airport – VINCI Construction Overseas – France

Challenge: Strengthen coastal defences to **safeguard the airport's shoreline from marine submersion and erosion.**

Solution: VINCI Construction built a 1,550-metre coastal breakwater using a single-layer shell made of 10,500 Xbloc+ concrete blocks patented by DMC.

Key figure: 50% less concrete used, equivalent 21,000 m³ of concrete saved.



Breakwater of the Réunion airport.

SOLUTIONS FOR DECARBONISING PORT EQUIPMENT AND MARITIME TRANSPORT



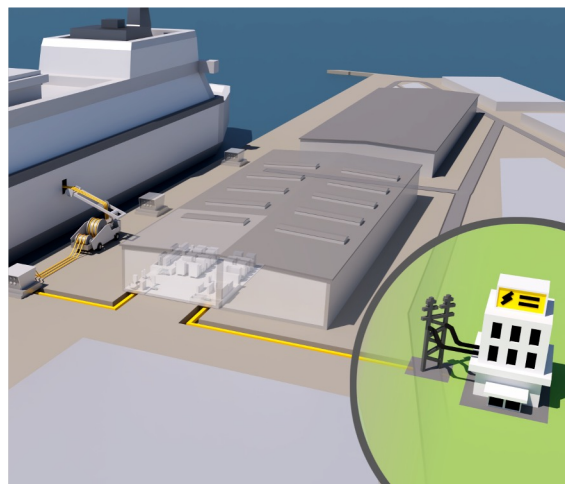
WITH THE INTERNATIONAL MARITIME ORGANISATION (IMO) AIMING TO REDUCE EMISSIONS FROM THE SECTOR BY 20-30% BY 2030, THE ELECTRIFICATION OF PORTS AND THE TRANSFORMATION OF PROPULSION SYSTEMS ARE BECOMING IMPERATIVE.

Electrification of port equipment

Concept: The decarbonisation of the maritime sector depends in part on access to electrical power in ports. To enable ships to switch off their engines, reduce their polluting emissions and obtain electricity, preferably from renewable sources, even when stationary, the electrification of quaysides is a necessity for ports and shipping companies.

VINCI's expertise: VINCI Energies has two brands in the energy transition sector:

Actemium, specialising in industrial processes, and **Omexom**, specialising in large-scale electrical networks. The combination of their technical expertise enables the Group to offer customised electrification solutions. Over the last ten years or so, Actemium has developed a solution that enables **electricity to be supplied to ships at berth, while significantly reducing emissions and noise pollution**. This solution, called **Onshore Power Supply (OPS)**, now enables ships to be connected to an onshore electricity grid via a cable system.



HAROPA PORT – VINCI Energies – Le Havre, France

Challenge: Propose the turnkey construction of an electricity conversion plant connected to the public distribution network to supply cruise ships parked on three quays.

Solution: A **mobile connection** was specifically designed and implemented to meet the site's tidal conditions and the need to **deliver power along the entire length of the quay, depending on the size of the ships**. Using Actemium's Onshore Power Supply (OPS) solution, this electrical connection of ships to the quayside has drastically reduced dependence on diesel. The project, one of the largest of its kind in Europe, is set to become the norm in Europe by 2030.

Key figure: A reduction of at least 15 tonnes of CO₂ equivalent per year.

Electrification and hybrid propulsion of ships

Concept: More than 80% of the goods traded in the world are transported by ship. Emissions from maritime transport have increased by 20% in the last decade. This sector faces twin pressures: reducing emissions while keeping costs under control. Shipowners are therefore seeking alternative, cost-effective propulsion solutions.

VINCI's expertise: A specialist in industrial processes, **Actemium** includes a marine branch whose expertise in **electric or hybrid propulsion** enables it to offer customised ship propulsion solutions. Whether it's a question of modernising an existing propulsion system to limit its carbon footprint or designing a zero-emission propulsion system, the company offers comprehensive support, from upstream engineering to ship maintenance.

Finistère – Actemium – France

Challenge: Provide complete electrical equipment for the public service vessel Phares et Balises.

Solution: The vessel, which carries out lighthouse and buoy maintenance missions along the Finistère coastline, is equipped with a **hybrid battery electric propulsion system**, which enables it to enter and leave ports or navigate in sensitive areas in **zero emission mode**. The ship's specific operational requirements were considered right from the design stage to optimise the entire electrical chain, particularly the hybrid propulsion, which is based on two battery-powered electric motors. The batteries can be recharged on the quayside in less than 10 hours, providing a range of one hour at five knots.

Key figure: Up to 40% reduction in diesel consumption.

¹¹ [Decarbonisation of maritime transport: how to accelerate the transition and make it equitable | UN Trade and Development \(UNCTAD\)](#)



SOLUTIONS FOR MARINE RENEWABLE ENERGIES



MARINE RENEWABLE ENERGIES ARE A RESOURCE THAT IS STILL UNDER-EXPLOITED DUE TO THE MANY TECHNOLOGICAL CHALLENGES INVOLVED. FINDING SOLUTIONS IS PART OF VINCI'S DRIVE TO DEVELOP A SUSTAINABLE BLUE ECONOMY.

Offshore wind power

Principle: Although marine renewable energies can take many forms (tidal, thalasso-thermal, wave), offshore wind power is undergoing sustained development. One of the technical challenges of its growth remains the conversion of energy and the limitation of its loss during transport to land infrastructures.

VINCI's expertise: Companies from VINCI's energy business line are contributing to the energy transition by being present at all stages of electricity production, transmission, distribution and use.

LanWin 3 – France – Dragados Offshore, Cobra IS

Challenge: Build electrical conversion stations.

Solution: VINCI, via its subsidiary Dragados Offshore, which specialises in offshore infrastructure, is to build **two electricity conversion stations for the LanWin 3 wind farm in the North Sea**, operated by the German grid operator TenneT. An offshore platform will convert alternating current into direct current to limit losses, while an onshore station will ensure conversion for injection into the grid.

Key figure: Ultimately, a production capacity of 2 GW.



Maintenance of wind farms

Concept: Offshore wind farms are located far from the coast, making them difficult to access depending on weather conditions.

Minor technical problems can quickly become complex and costly to resolve, bringing part of the installations to a permanent standstill.

VINCI's expertise: Omexom, a VINCI subsidiary and pioneer in energy production, transformation and storage infrastructures, has joined forces with Leonard, VINCI's innovation platform, to develop an **artificial intelligence solution for predictive maintenance of wind turbines, in order to detect generator failures before they occur.**

The behaviour of each wind turbine under normal conditions was modelled. The difference between the actual signal and the normal behaviour can be used to detect abnormal behaviour and trigger a maintenance alarm when the deviation is significant.

The solution has been successfully tested at the Riffgat wind farm in the German North Sea.



Air conditioning and seawater heating

Concept: Air conditioning is becoming increasingly widespread around the world because of global warming. Over the past 20 years, the related demand for electricity has risen to 2,000 terawatt hours (TWh) by 2021, representing almost 10% of the electricity consumed worldwide.

VINCI's expertise: Geoclean, a VINCI Construction business unit, designs and builds turnkey marine projects in the water and energy sectors. Its expertise has led it to develop seawater air conditioning and heating systems.

French Polynesia Hospital Centre – Geoclean, VINCI Construction

Challenge: Reduce electricity consumption for air conditioning at the Tahiti public hospital by installing a seawater air conditioning system.

Solution: Installation of a SWAC (Sea Water Air Conditioning) in deep water. This is the **largest and most powerful seawater air conditioning system in the world**. Since its commissioning in July 2022, the SWAC has reduced the hospital's electricity consumption by 35% and cut CO₂ emissions by 5,000 tonnes per year.

Key figure: The reduction in electricity consumption represents 2% of the island's total annual consumption.



Contributing to a sustainable blue economy within a strengthened governance framework

As a key player in the ecological transition, VINCI is mobilising its expertise and actively participating in developments in maritime and coastal activities. Through its resilient port infrastructure projects, its solutions for decarbonising ports and maritime transport, and its efforts to optimise renewable energies, **the Group is actively contributing to a regenerative maritime economy.**

requires **stronger international governance capable of coordinating public, private and scientific actors around common objectives.** It is by promoting cooperation, investing in responsible innovation and fully integrating the oceans into ecological planning that we can **transform the seas from a source of vulnerability into a space for solutions for the future.**

But these solutions alone are not enough.
Creating a truly sustainable blue economy



Seagrass restoration project in Faro, Portugal



The series *Environmental Solutions by VINCI* deciphers the challenges of the environmental transition and highlights the vision and the solutions that the Group is implementing 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: coast, Lima (Peru)



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